



COLONY AND PROTECTORATE OF KENYA

MEDICAL DEPARTMENT
ANNUAL REPORT
1946

INCLUDING

INSECT BORNE DISEASES DIVISION
ANNUAL REPORT 1946

MEDICAL RESEARCH LABORATORY
ANNUAL REPORT 1946

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MEDICAL DEPARTMENT HEAD OFFICES
NAIROBI

Sir,

I have the honour to submit for the information of His Excellency the Governor, and for transmission to the Right Honourable the Secretary of State, the Medical Report on the Health and Sanitary Conditions of the Colony and Protectorate of Kenya for the year 1946, together with the Returns, etc., appended thereto.

I have the honour to be,

Sir

Your obedient servant,

N. M. MACLENNAN,
Director of Medical Services.

The Honourable the Chief Secretary, Nairobi.

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MEDICAL DEPARTMENT ANNUAL REPORT

1946

INTRODUCTORY

The Report of the Development Committee, together with Appendices including the Reports of the Development Sub-committee, was published in 1946, but had not received the approval of the Legislative Council at the end of the year. Without doubt, this Report together with the implications arising from its recommendations, furnishes a most significant event in the social and economic history of the Colony.

Reference must be made to the Report itself on questions of detail, but, in general, it endorsed and approved the recommendations made in the Report of the Hospitals, Health and Nutrition Sub-committee, with which this Department is mainly concerned, and which postulated the programme of medical development.

The three most important projects in the Medical Department's Development Programme, and which rank highest in priority, are: the establishment of Health Centres throughout the Colony, the construction of a new and much larger Medical Training School in Nairobi, and the completion of the Group Hospital, Nairobi.

These three projects, to some extent, integrate. The completion of the Group Hospital, Nairobi, is urgently required not only to replace the existing and most inadequate accommodation for all races in Nairobi and to provide the necessary Specialist Centre for the Colony, but also as a clinical training ground for nurses and auxiliaries.

The rebuilding of the Medical Training School on a much enlarged basis is again necessitated by the limitation of existing accommodation and the necessity to provide for training on a wider and more thorough basis.

Not only will African nursing and auxiliary personnel be supplied from the Training School to hospitals throughout the Colony, but also health and hygiene staff to man the proposed Health Centres. The establishment of Health Centres at strategic points throughout the Colony will permit of that development of promotive health services on which great stress was laid in the last Annual Report; and, indeed, from every point of view, may be considered as the most vital project in the whole Development Programme of the Department.

In addition to these projects, provision is made for the improvement and extension of District Hospitals, a desideratum which is most important and long outstanding, especially in regard to general facility, amenity and sanitation, and also for the reconstruction of several hospitals which are now in a state where they can no longer function in any way properly. Further provision has been made for the establishment of a School Medical Service, which, for various reasons, has been long delayed and which is a requirement of the first importance. In addition, it is hoped that further work in regard to Leprosy and Tuberculosis, the latter being of considerable importance, can be undertaken.

As regards research, only minimum provision has been made, it being considered that this is a matter which might be delayed for the moment, especially in view of the anticipated report from Professor McSwiney, who visited the East African territories to investigate the necessity for Medical Research. The opinion, however, is that academic research should be kept to the minimum, but that an organization should be set up whose duty it would be to undertake fundamental physiological and socio-preventive investigation among the African community.

The whole of these projects involve a capital expenditure of nearly £1,000,000 and a greatly increased recurrent expenditure which will be borne by Colony funds. The total Development plan of the Department might be regarded as somewhat contracted and capable of considerable expansion in various aspects, but, in relation to the general economy and having regard to other influences which will be brought to bear, the scheme is by no means unsatisfactory. It will involve the recruitment of a considerable number of additional medical personnel and the whole scheme will depend very largely for its success upon the future of the Medical Training School and Health Centres.

Epidemiologically the year was of the highest importance. In the first instance, the work of the Insect-borne Diseases Division on the subject of Onchocerciasis has developed a technique of the complete eradication of *Simulium* by the lethal effect of D.D.T. upon larvæ in rivers.

Details of the work will be found in the section dealing with the Insect-borne Diseases Division and have been published in the Medical Press; but this is a development of the highest significance, economically as well as epidemiologically, and not only is it now apparently possible to eradicate *Simulium* by this technique, but by this eradication is also meant that many areas of land, previously closed on account of the prevalence of Onchocerciasis can now be opened for development and settlement. Further work was done by this Division with funds provided under the Colonial Development and Welfare Vote for the control of malaria in Highlands areas by the use of D.D.T. impregnation of huts on a large scale as an anti-adult mosquito method.

Details of the work done in this scheme so far can be found later, and the whole experiment is as yet uncompleted. But such results as are available show a marked decline of seasonal epidemicity of malaria in the area treated. The experimental work in this regard is highly important but it is too early to say whether or no such a method of control can, with economy and epidemiological certainty, be developed on a much wider basis. An inter-connection with the possible use of Paludrine as a causal prophylactic submits most interesting possibilities which have yet fully to be explored.

I.—ADMINISTRATION

During the whole year, the Department, with that of Local Government and the Government Chemist, worked under the control of the Member for Health and Local Government. One year is a short time in which to gain full experience of this mode of administration, but it may be said that many matters of administration have been facilitated under this method.

As regards hospitals, the question of evacuating the Mathari Mental Hospital, owing to its proximity to a large airport, had to be considered and was eventually decided upon; a new site with more rural surroundings and with the great advantage of having sufficient area for the development of out-door and agricultural pursuits by the patients, was purchased a few miles from Nairobi. The question of water supply for the proposed new site is being investigated, and it is hoped that it will be possible to make an early move with the preparation of final plans for this new hospital and for the construction work to begin at an early date. This has some priority in the general programme and funds are available for the purpose.

Other fair progress has been made with design and constructional work in respect of the Group Hospital, Nairobi, of which only the first African block, built from loan funds some years ago, is existing. A considerable amount of time was spent on the whole question of redesign and readaptation of the original Group Hospital scheme, made necessary by the increased and altered requirements of to-day and of the future. This is no light task and a complete revision of plans is still proceeding.

The construction of the second African ward block was commenced and plans were in course of preparation for a complete operating wing to be attached to the second block. As already mentioned, the completion of the Group Hospital is a most important item, as the existing hospital facilities for all races in Nairobi are extremely poor and overcrowded, and it is essential that the scheme should be completed at the earliest possible moment. Every consideration is being given to this and every effort is being made towards the earliest possible completion.

In respect of the District Hospitals, a small Cottage Hospital at Molo, partly paid for by local contribution, was finished, and a beginning was made with the building of another Cottage Hospital at Limuru, also in a settled area, and with extensions to the Native Hospital at Kitale; while negotiations were entered into in respect of the purchase from the Railway Administration of a hospital at Makindu which, when in operation, will be a useful accession to the facilities provided in the Ukamba Native Area.

At the same time a good deal of work was done as regards the production of new designs for ward units and ancillary buildings for all hospitals and preparatory work was done in respect of the production of plans for proposed extensions and improvements at several District Hospitals, particular consideration in this respect being given to the needs of the Northern Frontier Province.

The number of beds in Native Hospitals now available, or shortly to be available, will be greatly in excess of 4,000, but in spite of this, pressure is still being maintained and demands are still being made upon the Department for construction of further similar cottage hospitals or bedded dispensaries in certain areas, and the time has come when the most

serious consideration must be given to this question of bed expansion, especially in view of the proposals in respect of the extensions of health measures throughout the Colony.

This matter was dealt with in the previous Annual Report, but it is necessary to refer to it again at this juncture, and especially in view of the paucity of the existing health organization as such, it is most necessary to give proper consideration to development and general health measures and to restrict hospital accommodation to the absolute minimum. It is, however, hoped that Local Native Councils will support the proposals in regard to the establishment of Health Centres, and that an early start may be made with the introduction of these health measures which have unfortunately, and through various reasons, been so long delayed. There is, in addition, the vital subject of such a condition as tuberculosis, which, though actual statistics are lacking, is clearly on the increase and is providing a most serious menace to health. It is absolutely necessary in the general as well as the specific interest that an organization be set up at the earliest possible moment to investigate this condition and to make necessary recommendations. It is to be made clear that this is to be no simple or uncomplicated matter, and many factors have a bearing upon it; however, this investigation must be undertaken and every effort is being made to make a start.

As regards nutrition, the position is indecisive and requires, from the general as well as from the specific aspect, careful and proper investigation. Again, it is hoped that the recommendation of the Development Committee in this respect will be implemented and that a Nutrition Board, or similar organization with an executive, can be set up to work, especially in conjunction with Research and Health Officers and other organizations affected, on this extremely important, but as yet complicated, subject.

The European Hospital Authority came into operation in 1946 and assumed responsibility for the maintenance of several of the European Hospitals in the country. As regards finance, all European residents became responsible for financial contributions from poll tax and on graduated income tax.

The construction of a new European Hospital at Nyeri, partly financed by local contributions to the capital cost, was commenced during the year, and extensions are planned by the Governing Committee of several European Hospitals in the Colony. Some minor improvements were done at the Government European Hospitals at Nairobi and Mombasa and plans were also in being for major improvement and up to date extensions to the latter. At the European Hospital, Nairobi, it was intended to provide further accommodation, but this could not be effected by the end of the year. The pressure upon accommodation in the European Hospital, Nairobi, is very heavy, and for all reasons the construction of a new European block as part of the Group Hospital, Nairobi, is becoming a matter of increasing urgency.

The Asian Hospital Committee, set up in 1945, continued its deliberations during the year but had not reported by the end of 1946, though it had fulfilled the first part of the terms of reference by advising the Hospitals Health and Nutrition Sub-committee as to the number of beds required throughout the Colony for the accommodation of Asians. Irrespective of the terms of the report of this Committee, the fact is that accommodation for Asians throughout the whole Colony is very inadequate in amount or deplorably poor in standard.

So far as Nairobi is concerned, this matter will be rectified by the construction of the Asian block of the Group Hospital, but it is clear that much more accommodation of a higher standard must be provided elsewhere throughout the country.

The visit of Professor McSwiney materialized in 1946 and was very successful in every respect, bringing about the contact of a vital personality in his task of investigating and advising upon the question of medical research in East Africa. Later news of his unfortunate death in 1947 was a deplorable event which was received with great distress by all those who were associated with him during his visit.

While recruitment of medical and nursing staff proceeded well, this was offset by depletion caused by retirements and unfortunate casualties. In the circumstances, the existing staff deserve tribute for a loyal maintenance of high efficiency in the face of increasing pressure of work.

MEDICAL SERVICES FOR AFRICANS

Mention has already been made of the extra facilities for Africans built or in the process of building, and it has already been indicated that apparently, however much construction is undertaken, the pressure thereon does not appear in any way to decline. This is,

of course, a mark of appreciation by the African of hospital services, but still leads to an embarrassing position. Most hospitals, whether in the large centres or in the native areas, are distinctly overcrowded and the operation of hospitals, especially in regard to a higher standard of nursing, is a matter of great difficulty.

To relieve this position, and possibly to achieve a state of equilibrium, is not in the general opinion properly to be effected by more and more construction, but rather by greater and greater advancement of public health measures. In this respect, therefore, it is sincerely to be hoped that with the co-operation of Local Native Councils early progress will be made with the establishment of Health Centres and the furtherance of socio-preventive measures radiating through these centres. At the moment, the public health staff is exiguous and insufficient either to keep up with day to day items or to expand health measures to the necessary degree. In this ambition it is hoped that officers may be recruited who are in possession of public health qualifications or who have the necessary bias towards preventive and social medicine. Only by this can the expansion of health and preventive work be brought about.

But in general it would appear that to an increasing extent reliance must be placed upon African staff for the major proportion of the maintenance and operation of medical and health services for their own kin, and this was postulated as a main object for achievement within the development plan. With this end in view, the completion of the Medical Training School and the Group Hospital, as theoretical and practical training grounds, is obviously a project of prior importance designed to produce not only greater numbers of but better trained African medical auxiliaries of all kinds. Already some increase of the scope of the existing school has been brought about and a start made with the training of African Health Inspectors. But it becomes clearer with every moment that the constructional and staff programmes cited in the development plan for these proposed new institutions are of absolute necessity if this object is to be attained. Fortunately, the outlook in this respect is good, and it is possible to look forward to a reasonably early conclusion of these projects. On the other hand, the supply of African Medical Officers from Makerere is slow and inadequate in proportion to needs, and it does not appear that this state of affairs will be rectified within some considerable period of time. Apart from economic considerations, it is of importance generally that the flow of students to the Uganda Medical School should be stimulated. The question involves various considerations, including that of the necessary academic background, but is being carefully studied by all concerned.

A considerable reinforcement of the work performed by the Medical Department is provided by that undertaken by the major Local Authorities, Local Native Councils and Missions. In the case of Local Authorities, these are responsible almost entirely for maternal and child welfare clinics and allied social services. The authorities both at Nairobi and Mombasa have taken over also the administration of African Maternity Hospitals, formerly managed under the aegis of the Lady Grigg Welfare League, and, in the first case at least, important extensions to the hospital and training facilities for midwives are planned.

Except in the case of the poorer authorities, to whom Government assistance is being provided, the Local Native Councils are pursuing an increasingly liberal policy in medical matters and strongly support proposals for improvement. Their co-operation as regards Health Centres is fully expected as, indeed, it has always previously been obtained in all measures of health and welfare.

Lastly, in regard to medical services for Africans mention must be made of the success of the Rehabilitation and Limb-fitting Centre adjacent to the Native Hospital, Nairobi, which came into being as an inter-territorial organization during the war. Now that war casualties are almost entirely dealt with, this centre has switched over to civilian practice, and the extraordinary amount of orthopaedic and other work performed is practical evidence of the high degree of success of this facility, which has proved to be of the greatest benefit.

The amount of medical relief provided and the cost thereof is shown below and is compared with the two previous years:—

Year	Sanctioned Estimates (Recurrent)	Actual Expendi- ture	Qualified Medical Staff	European		Asiatic and African		Out- dispensary attend- ances
				In- patients	Out- patients	In- patients	Out- patients	
	£	£						
1944	319,689	329,602	51	2,746	7,177	112,822	589,963	1,033,447
1945	362,693	361,417	47	3,328	8,236	124,619	674,832	1,029,860
1946	425,287	408,951	53	3,369	9,567	145,898	796,008	1,218,073

It will be seen from the above Table that once again a new high record in the numbers of patients treated has been achieved. This has not been possible without difficulty, since the staff was not up to full strength, being unduly depleted by unfortunate casualties and retirements.

The staff which was retained to administer the public health and medical services provided by Government and its organization and disposition are set out in the Table following, together with a descriptive list of the institutions which were maintained.

TABLE I.—AT MEDICAL HEADQUARTERS AND IN THE CAPITAL TOWN OF NAIROBI

	Medical Headquarters	Medical Stores	Mathari Mental Hospital	European Hospital	Native Civil Hospital	Prison Hospital	Rehabilitation Centre	Infectious Diseases Hospital	General Dispensary	Loco Dispensary	Fort Hall Road Dispensary	Sandiford Road Clinic	Medical Research Laboratory	Railway Dispensary	Medical Training Depot
Acting Director of Medical Services	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ag. Deputy Director of Medical Services	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Assistant Director of Medical Services	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Chief Health Inspector	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Accountant	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Medical Storekeeper	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Assistant Storekeeper	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Clerks (European)	6	..	..	1	..	..	..	..	..	..	..	..	1	..	..
Senior Specialist Anaesthetist	1	..	..	..	..	..	..	..	..	..	..
Senior Specialist Surgical	1	..	..	..	..	..	..	..	..	..	..	..
Senior Specialist Ophthalmic Medical Officers	1	1	4	..	1	..	1	..	..	..	..	1	1
Radiologist	1	..	..	..	..	..	..	..	..	..	..	..
Radiographer	1	..	..	..	..	..	..	..	..	..	..
Physiotherapist	1	..	..	..	..	..	..	..	..
Wardmasters	1	..	..	..	1	..	..	..	..	..	..
Matrons	1	1	..	..	..	..	..	..	..	..	..	..	..
Nursing Sisters	15	4	..	..	..	1	..	..	..	..	1	..
Housekeepers	2	..	..	..	1	..	..	..	..	..	..	..
V.A.Ds.	4	..	..	..	..	..	..	..	..	..	..	..
Receptionist	1	..	..	..	..	..	..	..	..	..	..	..
Superintendent, Mathari Mental Hospital	1	..	..	..	..	..	..	..	..	..	..	..	..
Superintendent, Infectious Diseases Hospital..	1	..	..	..	..	..	..	..
Male Mental Nurses..	4	..	..	..	..	..	..	..	..	..	..	..	..
Female Mental Nurses	4	..	..	..	..	..	..	..	..	..	..	..	..
Senior Pathologist	1	..	..
Senior Parasitologist	1	..	..
Pathologists	2	..	..
Biochemist	1	..	..
Entomologists	2	..	..
Laboratory Superintendent	1	..	..
Laboratory Technicians	8	..	..
Technical Instructor	1	..	..	..	..	..	..	..	1
Librarian	1	..	..
Asian Medical Officers	1	..	..	..	1	..	..	..	..	..	..
Asian Dental Officer	1	..	..	..	..	..	..
Sub-Assistant Surgeons	1	..	..	2	..	1	..	..	..	..
Laboratory Assistants	4	..	..
Entomological Field Officers	2	..	..
Issuers	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Compounders	1	..	..	..	..	..	..	2	..	..	..	..	..	..
Clerks	5	3	..	..	1	..	..	..	..	..	..	..	1	..	..
Other Asian Staff	3	..	..	..	..	..	..	..	..
African Asst. Medical Officers	2	..	..	..	..	..	..	..	..	..	..
Hospital Assistants	1	1	29	1	4	13	4	..	..	..	..	..	..
Hospital Compounders	2	..	..	..	1	..	..	..	..	..	..
Laboratory Assistants	14	..	..
Clerks	1	..	3	..	..	1	2	..	..	..	1	..	..
Other African Staff	8	19	105	54	156	13	22	80	48	3	3	3	6	4	12
Asian Nursing Sisters

IN THE LARGER TOWNS

	Mombasa	Kisumu	Nakuru	Eldoret	Kitale
EUROPEAN OFFICIALS—					
Senior Medical Officers	1	1	1	—	—
Medical Officers	2	3	2	1	1
Radiographer	1	—	—	—	—
Nursing Sisters	15	2	2	2	1
Wardmaster	1	1	1	—	—
Senior Health Inspectors	—	—	—	1	—
Health Inspectors	1	2	1	1	—
Entomological Field Officers	—	—	—	—	—
Laboratory Technicians	1	—	—	—	—
ASIAN OFFICIALS—					
Asian Medical Officers	—	1	—	—	—
Sub-Assistant Surgeons	2	1	1	3	1
Laboratory Assistants	1	—	—	—	—
Nursing Sisters	5	—	—	—	—
Compounders	1	1	—	—	—
Clerks	1	1	2	1	—
Others	3	—	—	—	—
AFRICAN OFFICIALS—					
Clerks	2	1	1	2	2
Hospital Assistants	9	11	5	2	3
Hospital Compounders	2	—	2	1	1
Laboratory Assistants	5	—	2	1	—
Sanitary Assistants	1	2	2	—	3
Other African Staff	136	97	88	31	26
Assistant Medical Officers	—	—	—	—	—

DISTRIBUTION OF STAFF—IN THE NATIVE AREAS, THE TURKANA DISTRICT AND NORTHERN FRONTIER DISTRICT

	European Senior Medical Officers	Medical Officers	Nursing Sisters	Health Inspectors	Wardmasters	Asian Sub-Assistant Surgeons	Clerks	Africans Assist. Medical Officers	Hospital Assistants	Compounders	Laboratory Assistants	Clerks	Health Workers	Sanitary Assistants	Other African Staff
Thika	—	1	—	—	—	1	—	—	1	—	—	—	—	—	16
Kiambu	—	1	2	1	—	—	—	1	4	1	1	2	2	5	72
Fort Hall	—	2	1	—	—	—	—	1	7	1	1	1	1	4	52
Nyeri	1	1	1	1	—	1	—	—	3	1	1	3	—	5	43
Kerugoya	—	1	2	1	—	—	—	1	6	1	1	2	2	8	56
Meru	—	1	1	—	—	1	—	—	2	1	1	1	—	—	26
Machakos	—	1	1	1	—	—	1	—	5	1	2	—	2	7	55
Kitui	—	—	—	—	—	1	—	—	2	—	1	1	—	1	19
Kilifi	—	1	1	—	—	—	—	—	2	1	—	1	1	—	24
Malindi	—	—	—	—	—	1	—	—	—	—	4	—	1	—	13
Msambweni	—	1	—	—	—	—	—	—	2	1	1	1	1	5	37
Teita District	—	1	—	—	—	1	—	—	4	2	2	2	1	3	44
Kapsabet	—	—	—	—	—	1	—	—	1	—	—	—	—	—	19
Kabarnet	—	—	—	—	—	—	—	—	1	—	—	—	—	—	13
Tambach	—	—	—	—	—	—	—	—	1	—	—	—	—	—	8
Rumuruti	—	—	—	—	—	—	—	—	1	—	—	—	—	—	5
Maseno	—	—	—	—	—	—	—	—	—	—	—	1	—	4	10
Kakamega	—	2	2	1	1	—	1	—	5	1	2	2	3	1	100
Kisii	—	2	1	1	—	—	1	—	5	1	—	1	1	10	43
Kericho	—	1	1	—	—	—	—	—	5	1	1	1	3	—	43
Narok	—	1	1	—	—	—	—	—	2	—	1	1	—	—	24
Muriranjias	—	—	—	—	—	—	—	—	—	—	—	—	1	—	15
Kapenguria	—	—	—	—	—	—	—	—	1	—	—	—	—	—	8
Lodwar	—	—	—	—	—	—	—	—	1	—	—	—	—	—	7
Lokitaung	—	—	—	—	—	1	—	—	1	—	—	—	—	—	10
Lamu	—	—	—	—	—	1	—	—	1	—	—	—	—	2	18
Wajir	—	1	—	—	—	1	—	—	2	—	—	—	—	1	45
Moyale	—	—	—	—	—	1	—	—	1	—	—	—	—	—	—
Isiolo	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—
Kajiado	—	—	—	—	—	1	—	—	1	—	1	—	—	—	14
Mandera	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—
Garissa	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3
Marsabit	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—
Molo	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—
Londiani	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—
Thomson's Falls	—	—	—	—	—	—	—	—	1	—	—	—	—	—	5

INSTITUTIONS MAINTAINED

Medical Research Laboratory, Nairobi.

Medical Stores, Nairobi.

Medical Training Depot, Nairobi.

Hospitals in the Larger Towns, showing Bed Strength

Nairobi.—

	Beds
Native Civil Hospital (Asian 41)	420
European Hospital	45
Mathari Mental Hospital (European 15, Asian 26, African 294)	335
Rehabilitation Centre	45
Infectious Diseases Hospital (European 18, Asian 8, African 171)	197
General Dispensary	
Railway Dispensary	
Prison Hospital (Asian 12)	108
Police Depot Dispensary	

Mombasa.—

European Hospital	11
Native Civil Hospital (Asian 17)	235
Infectious Diseases Hospital (European 2, Asian 8, African 90)	100
Prison Hospital	14
Child Welfare Centres	

Kisumu.—

European Hospital	11
Native Civil Hospital (Asian 8)	245
Prison Hospital	9

Nakuru.—

Native Civil Hospital (Asian 6)	249
--	-----

Eldoret.—

Native Civil Hospital (Asian 6)	79
Railway Dispensary	

Kitale.—

Native Civil Hospital (Asian 4)	53
Prison Hospital	8

In the Native Areas.—

Thirty-four Hospitals with a total of 134 Out-dispensaries	2,186
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Summary of Hospital Accommodation

	Beds
For Europeans	102
For Asians	163
For Africans	4,085

STAFF CHANGES DURING THE YEAR

The following are the principal appointments, promotions and changes during the year:—

Dr. K. A. T. Martin was appointed Deputy Director of Medical Services as from the 12th February, 1946.

Dr. C. R. Philip was appointed Assistant Director of Medical Services as from the 12th February, 1946.

Dr. A. T. Howell was appointed Assistant Director of Medical Services as from the 12th February, 1946.

Dr. N. McLean was appointed Senior Medical Officer as from the 12th February, 1946.

Dr. E. A. Trim was appointed Senior Medical Officer as from the 6th November, 1946.

Dr. G. S. Hale was appointed Senior Medical Officer as from the 6th November, 1946.

Resignations.—Medical Officers, 3; Nursing Sisters, 7.

Retirements.—Medical Officers, 7; Nursing Sisters, 3; Health Inspectors, 1.

Transfers.—Medical Officers, 1; Nursing Sisters, 1.

FINANCIAL

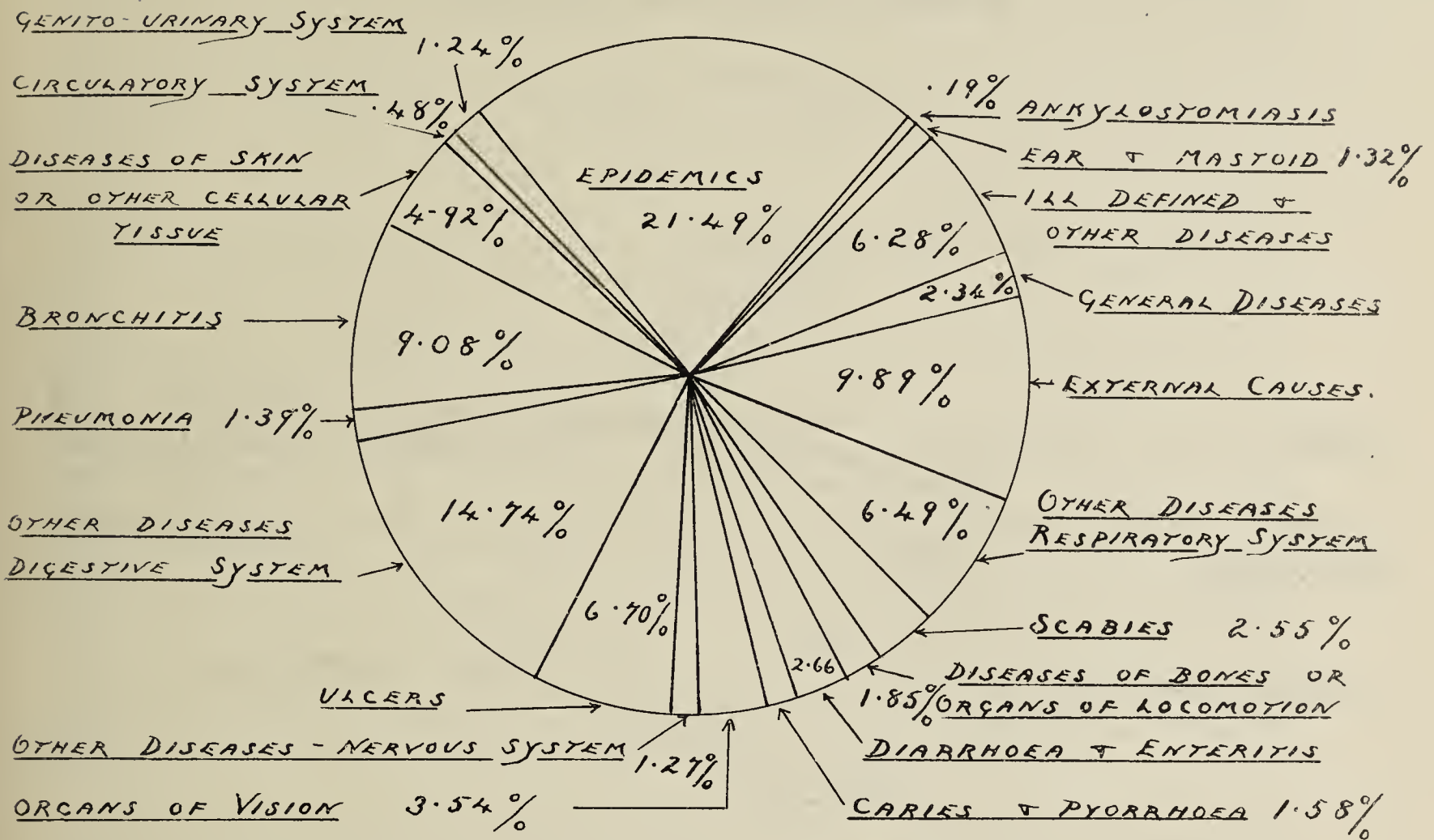
The total of the sanctioned estimates for the Medical Department for the year 1946 was £425,287, an increase of £62,594 on the previous year, and the actual expenditure during the year amounted to £408,951.

The comparative table of the sanctioned estimated expenditure of the Medical Department for the past three years is as follows:—

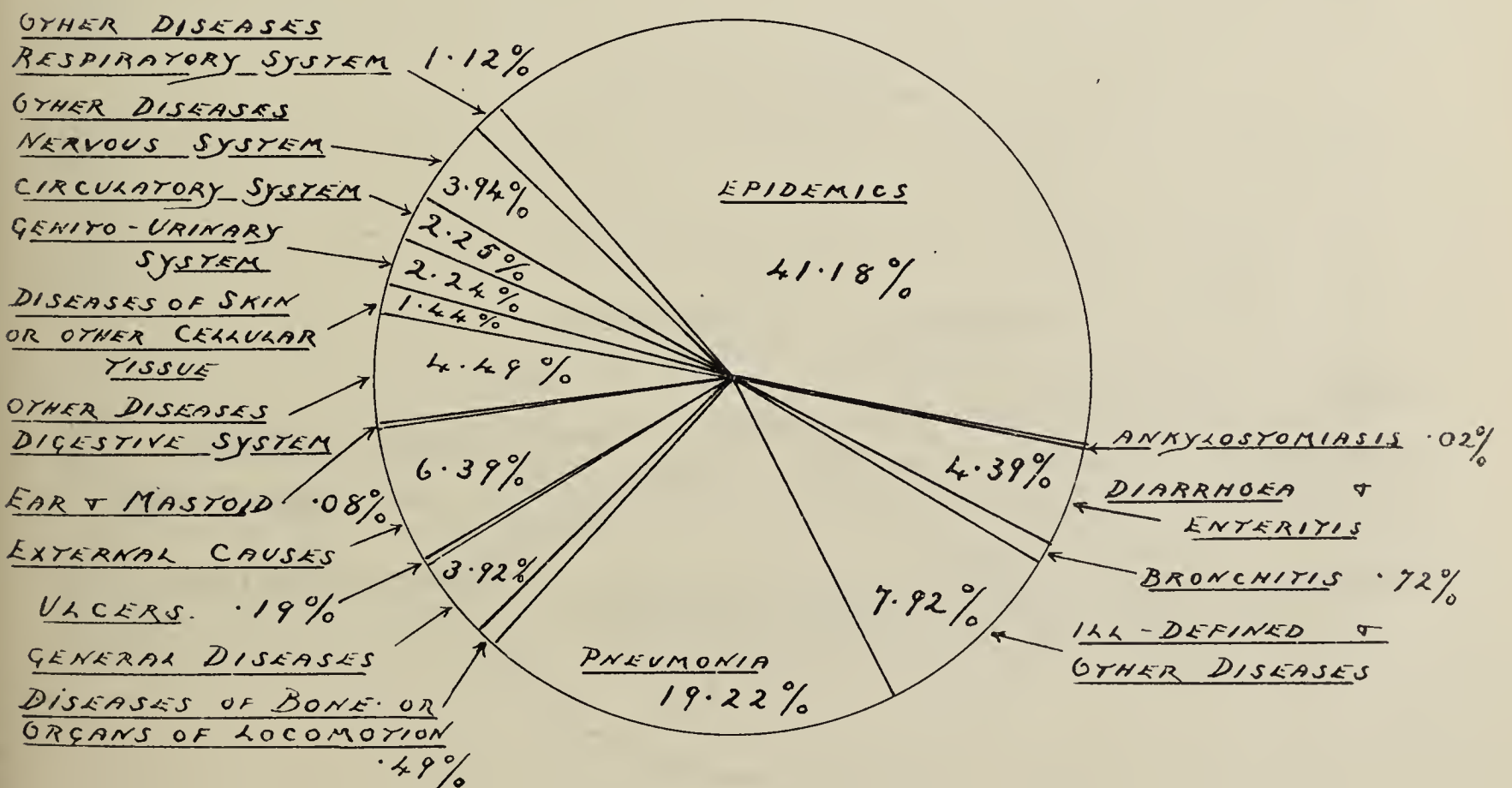
YEAR	Sanctioned Estimates (Recurrent)	Sanctioned Extraordinary Estimates	Total Sanctioned	Actual Recurrent Expenditure	Actual Extraordinary Expenditure
	£	£	£	£	£
1944	319,687	31,905	351,592	329,602	15,165
1945	362,693	23,205	385,898	361,417	26,982
1946	425,287	19,360	444,647	408,951	26,907

Proportion of Epidemic, Endemic, Infectious, Systemic and other Diseases shown
as Percentages of Total Cases treated at Hospitals and Dispensaries

TOTAL INCIDENCE 954,842.

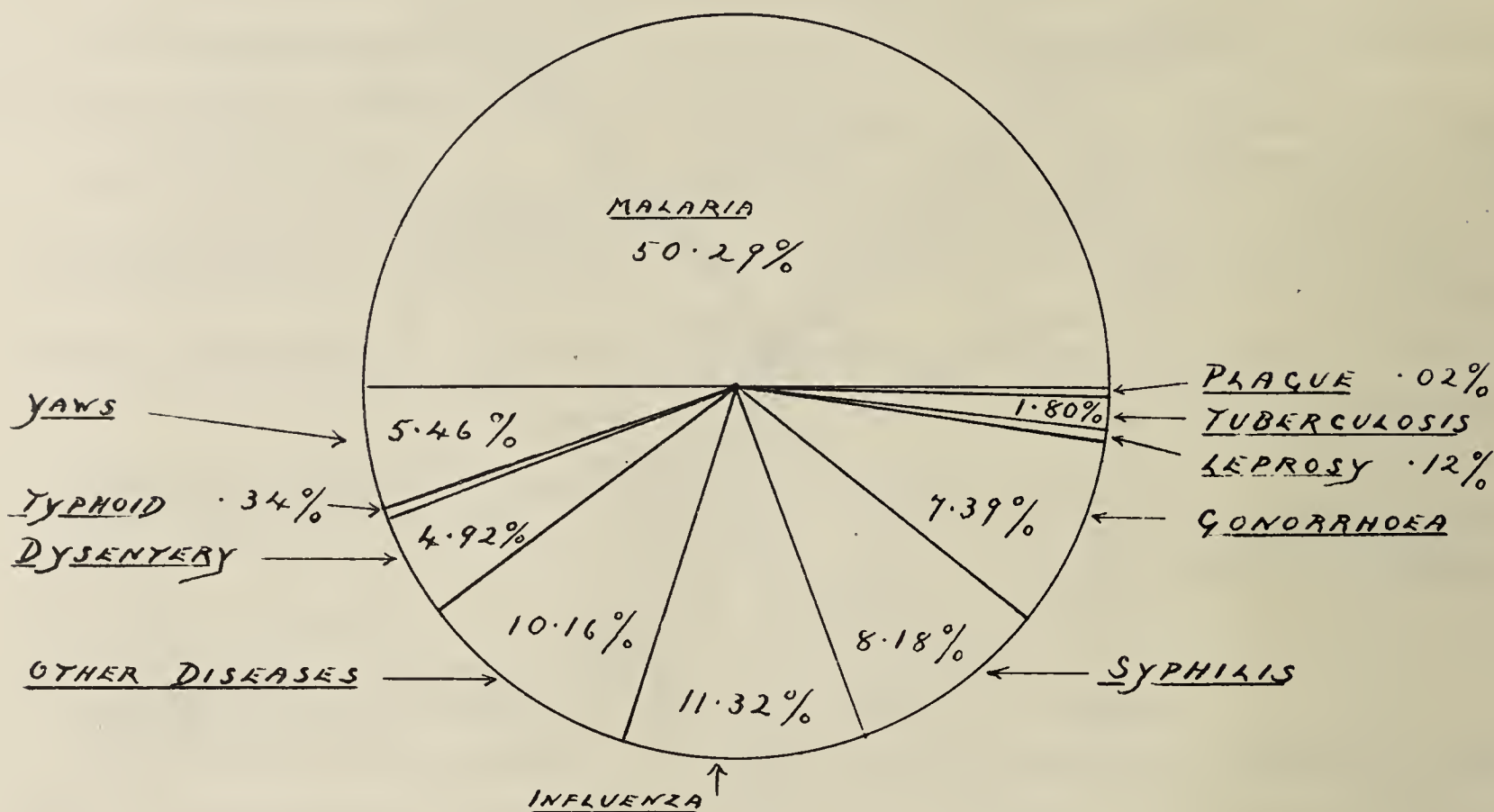


TOTAL DEATHS 5,100.

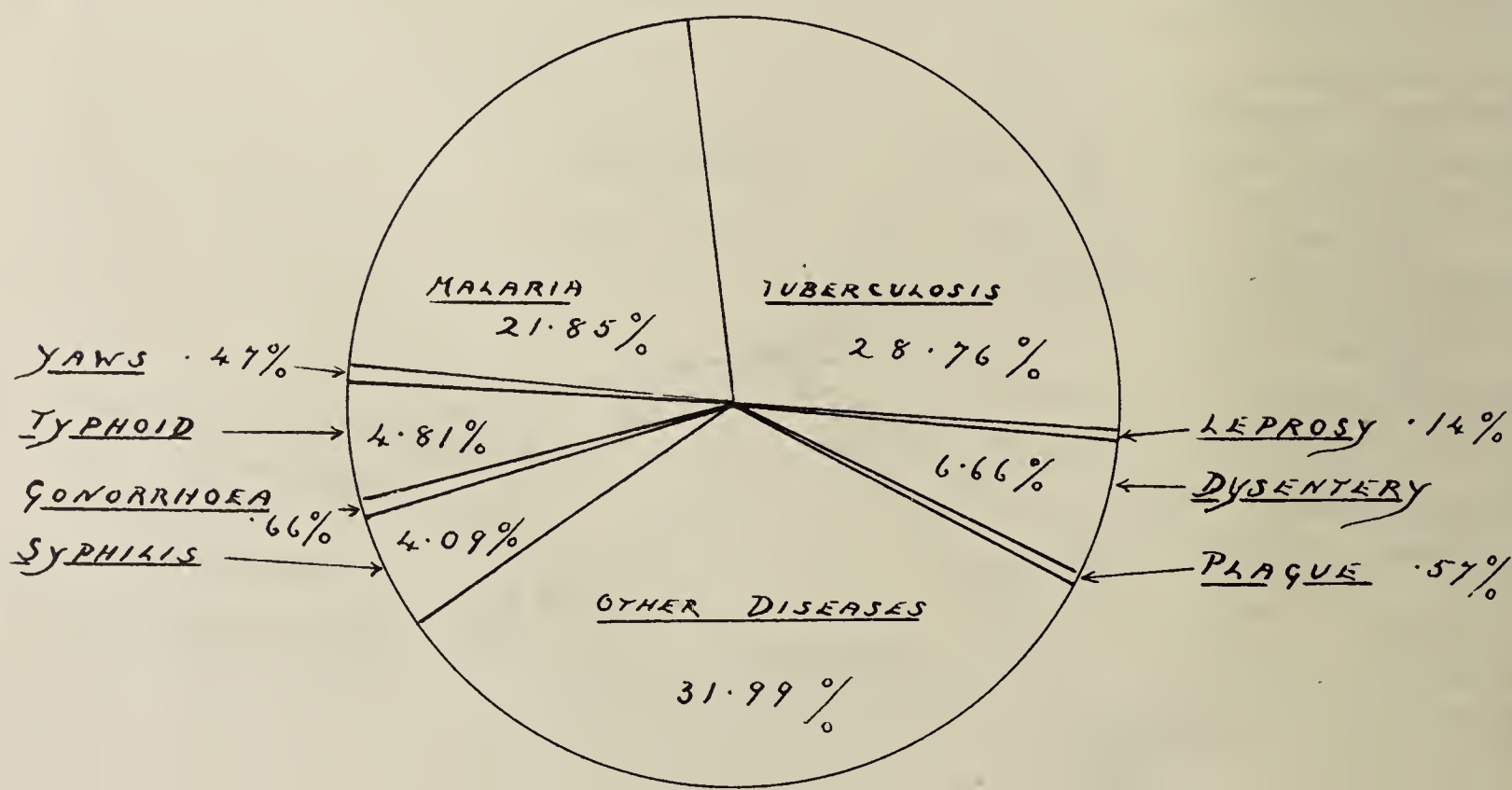


Proportion in percentages of Epidemic, Endemic and Infectious
Diseases, In-patients and Out-patients, treated at Hospitals
and Dispensaries

TOTAL INCIDENCE 205,145.



TOTAL DEATHS 2,069.



II.—PUBLIC HEALTH

GENERAL REMARKS

It has consistently been stated in these reports that lack of statistical information, particularly in regard to the true incidence of disease, morbidity, etc., renders it difficult properly to assess the state of the public health and to draw those deductions which might otherwise be possible. In general, however, it is the opinion that the state of the public health remained during 1946 on much the same level as the previous few years, and that, at least, no marked deterioration was detectable. It is true that a continued period of financial prosperity and employment contributed much to this. With any possibility of decline in these respects, and in any case basically, the question of maintenance of health must largely depend on the pursuit of a successful agrarian policy, especially as this bears upon the important question of nutrition. The increase in population is bringing about an increasing pressure upon land of decreasing power of maintenance, and in the long view improved measures of agriculture must be considered as of the highest importance in regard to the public health. Properly, therefore, a major part of the Colony's development scheme is to be devoted to this end, and the anticipated results together, possibly, with opportunity of employment from further industrial development, will be of the greatest significance. It is necessary to take serious cognisance of agriculture and nutritional requirements as fundamentals concerned with the state of health, and it is necessary that the policy concerned therewith should integrate with general medical measures. It is, therefore, unfortunate to have to record that there has been little advance made in the subject of nutrition, and that the carrying out of some fundamentally important investigations is still awaited. Conclusions at the moment can only be based on general impressions, which are that nutritional deterioration may be occurring in native areas; but such generalizations may be erroneous and unfortunate. Certain it is that, as mentioned before now, until funds and personnel are made available for the collection of data on the nutritional condition of the people and on the ability of the land to reach the target of production for optimum consumption, no advance can be made in this subject. Proposals have, therefore, been made with this objective, which it is hoped will materialize.

So far as the major infectious and epidemic diseases are concerned, the position was by no means untoward, with the exception of those about to be mentioned. The position in respect of tuberculosis, however, is disturbing and gives rise to anxiety. There would appear to be no doubt as to its increasing spread in the non-immune native population, and the virulence of its type, while the existing facilities for treatment are inadequate. It is the intention to make medical staff available for investigation of the problem, the solution of which, unhappily, is by no means so simple as may be thought.

The other condition of social importance, venereal disease, is also causing anxiety on account of its spread, which has been fostered by a relaxation of morals and of tribal sanctions. The position was fairly stated in the report for 1945, to which there is nothing to add in the general sense. The difficulty is, while serious consideration is being given to it, to devise some effective form of sex-education and propaganda in these diseases considering the material to which it would be directed. Nevertheless, if the spread of venereal disease is to be checked, the issue should not be burked and every authority concerned must render every backing and assistance, especially in social teaching and propaganda.

Mention must again be made of the reinforcement of the work of the Department which is provided by that carried out by the major urban Local Authorities and the Local Native Councils. No less than anyone else they had difficulties with which to contend, but continued to carry on with appreciable success those services with which they are particularly charged in regard to maternal and child welfare and environmental hygiene. The development of such services in the case of urban Local Authorities has reached a very high stage, and full co-operation is given by them also in duties which have international as well as local significance, for example, in the control of *Aedes* and yellow fever. In respect of environmental hygiene, progress, although of necessity limited, is being made with water supplies, sewerage and anti-malarial schemes, and assistance in the case of smaller authorities is being provided under development in some of these schemes. Considerable progress has been made with town-planning, but inevitably the greatest concern has arisen over the question of housing, which is as yet by no means fully alleviated for all races.

Local Native Councils provide the funds for maternity and dispensary work and partly for health measures carried out in the native areas. During the year under review their activities were as great as ever and in some cases expanded, while they expressed the desire

on more than one occasion for the adoption of further measures, particularly in specific matters such as tuberculosis. Clearly, without the aid provided by Local Native Councils there would be a considerable contraction, particularly of ancillary services.

Once again, owing to the intense demand upon curative services, expansion of preventive measures in the true sense has been impossible, though the somewhat exiguous staff available has, within its limitations, performed extremely fine work and general epidemiological control has been good. However, it is hoped, through the establishment in native areas of the Health Centres proposed in the development scheme, that measures designed towards the prevention of disease can be initiated and expanded to the necessary degree.

GENERAL DISEASES

The total number of cases treated during the year at Government Hospitals and Dispensaries, but not including out-dispensaries, was 954,842. Of this number, 805,575 were out-patients.

The total number of cases of all races treated as in-patients at Government Hospitals was 149,267. Among these occurred 5,103 deaths, giving a hospital death rate of 3.41 per cent. No deaths were recorded from out-patients treated.

Deaths recorded from among in-patients, within groups of diseases, were attributable in descending order of importance to:—

	<i>Per cent of Total Deaths</i>					
Epidemic and Infectious Diseases	40.54
Diseases of the Respiratory System	20.87
Diseases of the Digestive System	8.94
External Causes	6.27
General Diseases	4.55

As in previous years, pneumonia was the highest single cause of death.

EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES

The total in this group of 205,145 was made up of 149,850 out-patients and 55,295 in-patients, among the latter 2,069 deaths being recorded.

Malaria, as in the previous year, was outstanding with a combined total of 103,201 cases as against 81,505 cases in 1945. Of these there were 23,054 cases amongst in-patients with 478 deaths, being 23.10 per cent of the deaths within the group, four deaths occurring in Europeans.

There were 2,870 cases of tuberculosis, being treated as in-patients. Deaths from tuberculosis, numbering 615, were 29.72 per cent of all deaths within the group.

There were 27 cases of acute poliomyelitis, with four deaths. This disease has shown no epidemic tendency in late years.

Only three cases of Kala-azar were recorded. Endemic areas are known to exist in the Northern Frontier Province and between Machakos and Kitui. It is possible that the diagnosis of a number of cases is missed and that they may pass as malarial cachexia. In view of the successful results obtained from chemotherapy an investigation designed to bring the cases within reach of medical aid is worthy of consideration and, if combined with entomological research, effective preventive measures might also be found. Brief mention of work on leishmaniasis is made later in the report of the Insect-borne Diseases Division.

RESPIRATORY SYSTEM

The total of 161,922 cases in this group was made up of 19,223 in-patients and 142,699 out-patients. Among in-patients there were 1,065 deaths, of which 969 were due to all types of pneumonia, this disease alone being responsible for 18.99 per cent of all deaths. 2,457 cases of asthma were recorded, including in-patients and out-patients. This is a frequent complaint and affects all races. The aetiology is usually obscure, though in some cases a change of residential level proves to be beneficial.

DISEASES OF THE DIGESTIVE SYSTEM

There were in this group 183,177 cases, or 19.19 per cent of the total; 14,142 being in-patients and 169,035 out-patients. Deaths, numbering 456, were 8.94 per cent of the total deaths from all causes.

The total number of in-patient cases of appendicitis was 316, with eight deaths. 148 of these cases were European, 80 Asian and 88 African. If the incidence of appendicitis among Africans is believed to be increasing, it is still comparatively very low.

There were 1,848 in-patient cases of diarrhoea and enteritis in children under two years; among these there were 171 deaths. Among the 1,894 cases of diarrhoea and enteritis in ages two years and over deaths numbered 53.

Gastro-enteritis is a common symptom. In infants there is usually a basis of malnutrition, to which may be added an intestinal infection rapidly producing dehydration. A high mortality rate prevails as skilled nursing is only available in hospital.

EXTERNAL CAUSES

In this group there was a total of 94,461 cases, 14,332 being in-patients. Deaths among in-patients numbered 320, or 6.27 per cent of the total from all causes.

There were 2,718 cases of fracture, not including crush injuries which may have produced fracture.

There were 1,294 in-patient cases of burns by fire, with 117 deaths.

GENERAL DISEASES

Of the 22,527 cases in this group, 3,404 were in-patients and 19,123 were treated as out-patients. There were 232 deaths, or 4.55 per cent of the total deaths.

The prominent diseases in this group are rheumatism and anaemia of all types. 649 cases of acute rheumatism were treated as in-patients, with five deaths.

Among out-patients, a total of 1,906 cases of rheumatism were treated, but it is more than probable that while rheumatism is common the numbers shown of the acute type are unduly high.

Of the anaemias, only two cases of pernicious anaemia were treated, in one European and one Asian. It is doubtful if a true case of pernicious anaemia has yet been established among the African population. Sick cell anaemia has been found in an Indian case, and is common among the Africans of Uganda and Northern Rhodesia. A serious attempt to determine its incidence in Kenya is being contemplated. Although treatment is unsatisfactory, knowledge as to its incidence may be of considerable sociological importance. In other cases, malaria and malnutrition are common causes of anaemia.

A variety of deficiency diseases is included in this group. Important among these is the syndrome variously described as infantile œdema, "Kwashiakor", etc., of which 191 cases were treated as in-patients, with 42 deaths. The diets of many of the African population are, according to western standards, poor in quality and faulty in composition. In addition, the methods of infant feeding often show ignorance and neglect. It is, therefore, probable that much ill health is due in part to malnutrition, this syndrome being a case in point. Its exact ætiology is still in doubt. The presence of concomitant disease often complicates the question, for signs of avitaminosis may be precipitated by disease. Though various remedies have been tried, skilled nursing seems to be the most important part in the treatment of established "Kwashiakor". This group also includes malignant and non-malignant tumours. Of the latter 630 were treated, with one death.

Of malignant conditions there was treated a total of 329 cases, with 97 deaths. Racially, these occurred: in Europeans, 23 cases and eight deaths; Asians, 15 and two deaths; Africans 291 and 87 deaths. The total is a considerable increase over the number recorded for last year.

CIRCULATORY SYSTEM

1,032 cases treated as in-patients and 3,502 as out-patients constituted a total of 4,534 cases treated in this group. There were 115 deaths among in-patients, this representing 2.25 per cent of total deaths. Among valvular conditions of the heart, mitral disease is prominent.

AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF SENSE

There were 58,538 cases in this group, with 205 deaths or 4.02 per cent of total deaths. In-patients numbered 4,800 and out-patients 53,738.

Of diseases of the eye, conjunctivitis and trachoma are prominent.

Otherwise non-specific meningitis and neuritis are the commonest conditions. Mental diseases are dealt with later.

Limited investigation often prevents the full appreciation of diseases of the nervous system.

The commonest intracranial space-occupying lesion in the African is a tuberculoma. Neurosyphilis in nearly all its forms is seen and may become even more common in the near future. Virus infections, even if not of frequent occurrence, in their dramatic onset and often devastating results, constitute in our ignorance as to methods of prevention and treatment a source of disquietude. This is an exceedingly difficult field for research, but when increased facilities become available might yield important results.

SKIN AND CELLULAR TISSUE

Of the diseases in this group there was a total of 135,331 cases, composed of 12,010 in-patients and 123,321 out-patients. This was 14.17 per cent of the total cases treated, ulcers alone representing 7.22 per cent. The enormous numbers of ulcer cases still presenting for treatment constitute a great problem. 6,286 were treated as in-patients and 62,663 as out-patients. While many are treated by ambulatory technique, the numbers entering hospital for various reasons are still high, and occupy bed space badly required for more urgent cases. Means are being sought to deal with this in a satisfactory fashion. The crux of the business, however, is to deal with the dietetic and nutritional causal background, in which the occurrence of ulcers is not singular. Experience obtained, especially during the war, demonstrates the emphasis that should be placed upon adequate dietary in the prevention of this condition.

Communicable Diseases

MOSQUITO OR INSECT-BORNE

In 1946, 103,201 cases of malaria were treated in Government hospitals and in dispensaries, as against 81,505 in 1945.

The cases were classified as follows:—

Benign tertian	...	...	...	...	...	1,140
Quartan	...	...	...	...	...	633
Aestivo-autumnal	...	...	...	...	...	31,524
Clinical	...	...	...	...	...	68,218
Cachexia	...	...	...	...	...	1,517
Blackwater	...	...	...	...	...	36
Cerebral	...	...	...	...	...	133

Of particular interest in the year under review, and for some years preceding, is the establishment of malaria in the western highlands of Kenya. During 1946 there was a severe malarial epidemic in this area which began in June and extended throughout the countryside. Labourers on farms and tea estates in the district were affected severely, and by August many were extremely debilitated, while not a few deaths occurred.

The districts of Kisii and Sotik were affected with especial severity, and the following figures show how the disease has progressed in Kisii, where the annual malarial incidence has increased greatly during the last few years:—

1938	...	169 cases	1943	...	1,966 cases
1939	...	560 cases	1944	...	3,486 cases
1940	...	1,875 cases	1945	...	4,309 cases
1941	...	780 cases	1946	...	7,120 cases
1942	...	1,830 cases			

Londiani, which is situated at nearly 8,000 feet above sea level and where malaria was unknown before 1941, was also affected by the epidemic and very severe infections were seen. No other explanation for the introduction of malaria into these highland areas, where its presence is a matter of considerable economic concern, can be given except as an accompaniment of development. Presumably, means of transport gradually conveyed the mosquito from the low-lying hyperendemic areas, and the responsible vector, *A gambiae*, became established as the result of ideal breeding places which existed or were manufactured.

In the past most observations on malaria in East Africa have been made on the lowland form of the disease. In the highlands, with a relatively cold climate, the epidemiology of the disease is very different and detailed observations on the behaviour of the vector at these altitudes are being made in the course of a D.D.T. control experiment which is proceeding.

Samples of the people were examined along the coastal strip at various times during the year. Less malaria was found than might have been expected in a hyperendemic area, and there was a remarkable absence of anopheline vectors. At Gedi, for example, which used always to be regarded as extremely malarial, less than ten per cent of a small sample survey of persons had demonstrable parasites in the blood. It is probable that this state of affairs was abnormal and caused by persistence of dry conditions.

Elsewhere in the Colony it is not considered that the occurrence of malaria was unusual.

Trypanosomiasis.—

Sixty-four cases of trypanosomiasis were recorded, with eight deaths. These were treated in hospital or at bedded-dispensaries which were specially constructed and staffed for the purpose in South Kavirondo during the year. All the cases seen were *T. gambiense* infections, most being infected in the South Kavirondo district, with the exception of one. This was a case reported from the Narok district towards the end of the year, which on investigation proved to be a *rhodesiense* infection. Apart from a few cases in Central Kavirondo in 1942, due to an extension of the Busoga epidemic from Uganda, this is the first case of *rhodesiense* infection to be recorded in Kenya. Investigations are being made to discover the extent of the disease in the district concerned, and in respect of any preventive measures required. But the area is sparsely populated by Masai nomads, and any outbreak on a large scale is regarded as unlikely.

Plague.—

Thirty-four cases of bubonic plague and one case of pneumonic plague, with thirteen deaths, were recorded from all sources, 32 being treated in hospital; 24 of the cases being notified from the Nakuru district, which has a long history of endemic plague. The remainder occurred in the Kiambu and Nyeri districts of the Central Province. Nairobi, Mombasa and Kisumu Municipal areas remained free of the disease.

Typhus.—

There were 35 cases of non-epidemic typhus reported, with one death, compared to 47 cases and three deaths in 1945.

Relapsing Fever.—

The epidemic of louse-borne relapsing fever in the coastal area, which began towards the end of 1945, had been brought completely under control by the end of January, 1946. This excellent result, which had been anticipated, followed the mass disinfestation of the local population with a powder of 5 per cent D.D.T. in kaolin. Of the total of 770 cases of relapsing fever, with 34 deaths, reported during the year, 236 occurred in the course of the louse-borne coastal epidemic, among these being ten deaths. The death-rate fell considerably in the later part of the epidemic, owing to the provision of facilities for early treatment.

No further cases of louse-borne relapsing fever occurred during the year, but a considerable number of cases of the tick-borne variety were treated. These amounted to 534 cases, with 24 deaths.

Tick-borne relapsing fever would appear to be on the increase, and the number of cases diagnosed has risen in the Meru district, which is the main centre of infection, from 40 in 1943 to 250 in 1946.

The discovery that lice can be readily infected with the Kenya form of the tick-borne relapsing fever by feeding them on infected laboratory animals is of considerable interest, and suggests that it may be possible for epidemics of louse-borne *duttoni* to occur. Certain small epidemics that have occurred in Kenya in the past may be explained in this way. Further investigation of the tick-borne variety of relapsing fever, especially in relation to prevention by the lethal effect of insecticides on ticks, is projected.

INFECTIOUS DISEASES

Smallpox.—

Eight hundred and twenty-four cases of smallpox were notified, with 193 deaths. Provincially, the greatest incidence occurred in the districts of the Nyanza Province, followed by the Coast Province, with a number of cases in the Mombasa Municipal area. Incidence was much lighter in the Central and Rift Valley Provinces, and cases were also recorded from the Masai district. The total number recorded was from all sources and that treated in Government hospitals as in-patients numbered 459, with 123 deaths. The disease generally

was of a lesser virulence, though occasional small local outbreaks with high virulence occurred. Preventive measures consisted in isolation and vigorous pursuance of vaccination with lymph manufactured at the Medical Research Laboratory.

Pneumonia.—

A total of 11,311 cases of all types of pneumonia was treated as in-patients at Government hospitals, and among this there occurred 969 deaths, a mortality rate of 8.57 per cent.

Of the total in-patients, 7,012 were cases of lobar pneumonia, with 414 deaths, a hospital mortality rate of 5.89 per cent; and 3,780 were cases of broncho-pneumonia, with 489 deaths, a mortality rate of 12.94 per cent.

The frequency and severity of pneumococcal infections vary greatly in the Colony, but are maximal in the Central Highlands. In 1937 the mortality rate from lobar pneumonia among African in-patients at the Native Hospital, Nairobi, was 27.5 per cent. In 1946, at the same hospital, the mortality rate was 10.2 per cent. The decrease in mortality is due chiefly to treatment with sulphonamides, and to a less extent to penicillin, and is typical of the saving of life which has occurred elsewhere. To appreciate partly the reasons for the relatively high mortality rate from pneumonia still existing among Africans as compared with other races, it must be realized that the term lobar pneumonia may be used to cover such diverse clinical pictures as an acute fulminating pneumococcal septicæmia with initial pulmonary signs in a young adult, or severe lobar pneumonia complicated by toxic jaundice (which may be superimposed upon an already fibrotic liver); or again unresolving pneumonia in an old and debilitated patient. The relative frequency of pneumococcal meningitis—a disease still carrying a high mortality—adds further to the importance of pneumococcal infections. In small children the infection usually takes the form of broncho-pneumonia, and the high mortality rate figure indicates also the poor state of general health of many children in whom the infection may be only a terminal event.

To assess exactly to what extent improved environmental conditions and improved nutritional conditions might alleviate the position in regard to pneumococcal infection and mortality in the African, would require an investigation and analysis of cases which it is quite impossible to undertake in present circumstances. But in that any improvement which it is feasible to bring about could but do good, there is no need to await such an analysis. For it is certain that malnutrition and unfavourable environmental conditions combine in producing in the African a state where lack of resistance to infection is marked and liability to mortality is enhanced as compared with other races. Pneumonia is not alone in this respect and is but an example of many other conditions that are similarly preventable.

Venereal Diseases.—

These diseases are discussed later in the report under the heading “Venereal Diseases Clinics”.

Tuberculosis.—

A total of 3,929 cases of tuberculosis of all kinds was treated at Government hospitals and dispensaries. 2,870 of these were in-patients and among this number there were 615 deaths. Reference to the seriousness of the problem constituted by tuberculosis infection among Africans was made in the preceding Annual Report, and there is no reason to believe that there is the slightest improvement in the position.

The ravages of tuberculosis infection continue largely uninfluenced by direct therapeutics. Relatively few patients who are diagnosed as suffering from pulmonary tuberculosis are cured, and the number presenting as cases of generalized tuberculosis or tuberculosis meningitis is distressingly great. There is more hope for patients with tuberculosis peritonitis, while many recover from tuberculosis cervical adenitis. Satisfactory results are being achieved in the surgical treatment of bone and joint tuberculosis, but the number of cases treated is small compared to the total occurring.

Whilst contact in the native areas with returned soldiers and labourers may play a part in the spread of tuberculosis, the chief brunt of the disease is being borne by families living in those areas. Tuberculosis is exacting a heavy toll from the African population and it is not known if an increasing immunity is developing, though it is unlikely.

The problem presents many difficulties and complications. Adequate treatment would necessitate a great extension of accommodation and expansion of staff; but even if this could be done there are human factors that require careful consideration.

Preliminary investigational work, together with increase of accommodation for the specific purpose is planned. Meanwhile, however, much reliance must continue to be placed on such factors as bear upon the side of prevention, such as improved housing, nutrition and hygiene. In respect of increasing immunity, any measure which may be of value should be considered, and the possibility, therefore, of the use of B.C.C. or Vole vaccine will be explored.

It cannot, in general, however, be said that the outlook as regards tuberculosis is heavily tinged with optimism.

Enteric.—

A total of 691 cases of enteric fever was treated under Government ægis, 101 deaths occurring among the 691 hospital in-patients.

The severity of typhoid fever varies, but is frequently great. Lister anti-typhoid serum has been used to a limited extent in treatment, but a controlled experiment to evaluate its full efficiency has not as yet been possible. Prophylactic vaccination in prevention is widely practised, but still needs to be extended.

Of other intestinal conditions, a number of cases of infection by organisms belonging to the *Salmonella* genus has occurred, including a fatal case due to *S. montevideo*. Such cases, occurring sporadically, may be severe and difficult to diagnose if laboratory facilities are not readily available.

Dysentery.—

The classification of cases treated at Government hospitals and as out-patients, is:—

	1944	1945	1946
Amœbic	5,067	4,268	4,530
Bacillary	2,156	2,082	2,773
Undefined	3,450	2,897	2,921

The position in regard to amœbic dysentery is somewhat indeterminate and requires more investigation. It would be more correct to say that the great majority of cases come under the heading of chronic amœbiasis, as classic acute symptoms due to this cause are not often seen. Liver abscess is relatively uncommon, cases with deaths being recorded. That amœbiasis is the cause of some degree of invalidism is true. On the other hand, the manifestations are protean and other conditions are wrongly attributed to this infection.

The finding in the stool of amœbæ indistinguishable from *E. histolytica* does not mean that the patient is suffering from amœbic dysentery. There appear to be different races of *E. histolytica* that are non-pathogenic, but which are indistinguishable from the pathogenic form.

As regards public health importance, the mode of infection and spread would appear to be through contamination of water and food with fæcal material containing cysts, by flies, the use of human excrement in fertilization of vegetables and spread by animals. The probability of spread of infection by food handlers is considered more remote. It would appear that improvement in general hygiene and sanitation is the main measure in regard to prevention.

Diphtheria.—

The total number of cases reported from all sources, these being 51, with eleven deaths, was higher than that for 1945. Forty-two cases were treated in Government institutions, and among these there were five deaths. The mortality rate in 1946 rose appreciably over that for the previous year.

Protective immunization is now practised widely.

Cerebro-Spinal Fever.—

A total of 512 cases, with 185 deaths, was recorded, a reasonable drop in the incidence for 1945.

Anthrax.—

Eight hundred and seventy-six cases in all were treated at Government hospitals and dispensaries, 729 being in-patients. Deaths from this cause were 57.

Undulant Fever.—

Of the 88 cases of this disease there were 78 in-patients, among whom occurred two deaths. Examples of human infection with *Brucella melitensis* and *Brucella abortus*, both classical and rhodesiense type, have been established. It is being increasingly realized that brucellosis is a cause not only of prolonged fever, but also of arthritis, particularly of the sacro-iliac joint, with but little fever. Also a number of cases have been observed characterized by great splenomegaly, associated sometimes with fibrosis of the liver.

Leprosy.—

While only 253 cases of leprosy, among whom there were three deaths, were under treatment during the year, the total number of cases throughout the Colony is unquestionably very much higher. Though a disease of relative unimportance compared, say, with tuberculosis, the long and often disfiguring illness may be a calamity to the patient. Patients presenting for treatment are mainly housed in the two Government leper camps at Kakamega and Msambweni, where minor improvements of a medical and social nature were made during the year. The whole question, however, of the physical and social welfare of lepers is most unsatisfactory. More than a ray of hope, however, now shines on the problem through the promise of development of curative drugs. In so far as these prove to be effective on trial, possibly equally will there be reduced the problems of accommodation, segregation and general care, and the next few years may therefore bring about a radical change in outlook towards this disease.

Helminthic Diseases.—

The comparative table of cases of helminthiasis treated over the last three years is as follows:—

			1944		1945		1946
Ancylostomiasis	...	...	1,815	...	2,517	...	1,898
Ascariasis	...	...	12,741	...	13,166	...	17,856
Tæniasis	...	...	22,303	...	27,880	...	26,203
Schistosomiasis	...	...	2,005	...	2,577	...	2,815

Infestation with hookworm is still widespread among coastal tribes, and quite frequent in certain other districts, notably in the Kiambu district of the Central Province. In the coastal area anæmia is also prevalent. The estimation of the relative importance in the production of the anæmia to be attached to the load of hookworms carried and to concomitant malnutrition and other infections awaits field investigation. Where adult hookworms have been identified they are *Necator americanus*.

Infection with *Ascaris lumbricoides* is very common and heavy infestations, particularly in children, contribute to general ill health and chronic respiratory symptoms.

Infestation with *T. saginata* is extremely common amongst those tribes which eat beef freely. It appears to cause little discomfort to the majority. A rare tapeworm in man, *Multiceps seriatis*, was reported in a case at Fort Hall. The importance of tæniasis is not limited to its effects in man, but is of considerable economic moment in relation to the stock industry. Condemnations for heavy infestation of beef with measles are very frequent at abattoirs, and a considerable amount of meat is destroyed through this cause. The best way to break the chain in the life-cycle is not yet determined, but it is hoped to try a combined attack with human disinfection and concomitant and necessary sanitary improvement.

In regard to Bilharzia, infection with *S. hæmatobium* is extremely common at the coast and in certain other areas. The symptoms are usually slight, but there is evidence that a considerable amount of vesical and renal disease may originate from this infection. The intensive antimony treatment has met with success.

Infection with *S. mansoni* produces few intestinal symptoms, but is an important cause of fibrosis of the liver and splenomegaly in certain areas, notably Ukamba. It is doubtful if treatment of patients in whom ova are found in the stools makes an appreciable effect on the incidence of fibrosis of the liver due to *S. mansoni*. The part played by monkeys in spreading the disease requires to be determined in association with any preventive measures.

III.—HYGIENE AND SANITATION

A—GENERAL REVIEW OF WORK DONE AND PROGRESS MADE

(1) Preventive Measures

MOSQUITO AND INSECT-BORNE DISEASES

Malaria.—

Kenya, with its great variations in altitude and climate, exhibits malaria in all its forms in hyperendemic, endemic and epidemic zones. Infection by *P. falciparum* is by far the most common and serious. *P. malariae* is second in frequency, but an increase in *P. vivax* is reported from North Kavirondo. Whilst the behaviour of the hosts and parasites, under the diverse conditions of Kenya differs exceedingly, there is a great deal of preventable disease occurring.

In townships and built-up areas the question of prevention largely resolves itself into a choice between, or combination of, temporary control methods and permanent anti-malarial engineering works. In the latter respect, progress, through various material reasons, has not been rapid. But it is now expected that improvement will result and several authorities are already preparing schemes of permanent works, either for the purpose or as part of their general schemes of development and town planning. In the general scheme the appointment of an anti-malarial engineer has been adumbrated as a real necessity, and it is hoped that a specialist in this subject can be secured without much delay.

It is, however, in rural and native areas that the great problem exists. The results of experimental adult vector control by D.D.T. impregnation of houses have been reasonably satisfactory, though there are certain features in this method that require further investigation. From the point of view of practical politics in the application of such control measures, a good deal of further information is required and the economic implications need to be determined. Data on various aspects of the question are being collected through the work of the Colonial Insecticide Research Organization in Uganda and from local work.

The advent of new causal prophylactics and curative agents at this time also leads to reconsideration of malarial control and prophylaxis as mass measures. The success of paludrine elsewhere, for example, encourages the hope that through its use certain groups of individuals, at least, may be protected against the more serious forms of malaria, and that an extension of chemical prophylaxis may prove to be an effective and economical measure. On the other hand, success has attended the use of new insecticides as larvicidal agents, and the simple technique involved and relative ease of applicability tend toward favourable consideration of this method of control.

Largely a decision on the outcome of a choice or combination of mass chemotherapeutic prophylaxis and insecticidal control will depend, perhaps, on administrative facility in organization for the one or other, taking physical difficulties into consideration. But, at least, there is now opened up an attractive and effective combination, which may be used flexibly as circumstances require.

Yellow Fever.—

Aedes control measures have followed the lines established in previous years. With the exception of Nairobi Municipality, a part of the railway system and the Mombasa Municipal area, *Aedes* control is staffed entirely by the Insect-borne Diseases Division. In the two major Municipal areas the work is undertaken by the local authority.

Details of the method of control are well known and receive but brief recapitulation. Essentially control is effected by a staff of inspectors who search all premises in the controlled area at weekly to fortnightly intervals for the presence of *Aedes* larvæ, the discovery of which may render the householder liable to a penalty for default. Simplification of legal procedure was brought about by amendment of the Public Health Ordinance in 1945. House searching, which is under double check and ultimately in the charge of a European supervisor, and the destruction of larval breeding places found in and around premises, is implemented by general clearance and cleansing measures designed to control breeding in outside areas. At seaports there is a special system devised to control mosquito breeding in shipping, while at the last airport of departure all aircraft are disinsectized as routine.

The *Aedes* indices for 1946 are shown in Appendix III to the report of the Insect-borne Diseases Division and remain at the low level which has been maintained since 1942.

Although control is relatively expensive and entails work of a monotonous nature, its continuation ensures the maintenance of *Aedes* index at a level at least capable of ensuring the impossibility of epidemic spread should infection occur. In addition, it fulfils international obligations and reacts favourably in respect of quarantine restrictions. Apart, however, from these points, the successful maintenance of control not only eliminates much of the domestic mosquito nuisance, but also connotes an incidental high level of general sanitation and cleansing.

Aedes control should be regarded as the first and last defence against yellow fever. Immunization of the population presents itself as a facile proposal, but difficulties in maintaining immunity with a method which is to some degree transient are obvious.

Whether or not this form of mosquito control should be combined with general malarial control is a moot point. However, the persistence of a low *Aedes* index does prove the success of dichotomy, and since unification might be less satisfactory unilateral control is meanwhile being pursued.

Staff is especially trained in methods of *Aedes* control, whether members of the Department or not. In addition to training in practical methods, all those engaged on *Aedes* control now have a systematic course in entomology.

Trypanosomiasis.—

The whole of the work in regard to the control of trypanosomiasis is now undertaken by a Tsetse Fly Committee, under the Chairmanship of the Member for Agriculture and Natural Resources, and an executive officer and staff have been appointed. Important surveys of many of the fly-bearing areas of the Colony have been made and large schemes for fly eradication drawn up. The schemes are doubly important, since they incorporate also the question of rehabilitation and resettlement in such areas.

The part of the Medical Department is therefore largely confined to advisory assistance and to extension of treatment facilities.

Onchocerciasis.—

In the report of the Insect-borne Diseases Division will be found reference to the technique of eradication of *S. Nævei* by treatment of rivers with D.D.T. Following on this apparently completely successful discovery it is now planned to apply this method of control to much wider infested areas and a scheme has been drawn up for the Kaimosi-Kakamega district. The value of this method of control, as measured in alleviation of human suffering and the ensuing economic advantages, is incalculable.

Plague.—

As regards preventive measures concerned with this disease there is nothing to add to what was said in the previous Annual Report, unless to draw attention to the value of the new insecticides in their effect on the insect vector. No large epidemics have occurred for several years and the improvement of environmental conditions in towns must be set as the most important anti-plague measures.

In rural districts and native areas the problem is perhaps more difficult owing to the prevailing conditions, but here again gradual improvement in hygiene is also the first measure.

Smallpox.—

Despite continuous and widespread vaccination, smallpox infection continued, though on a degree and generally of a virulence much less than in the outbreak of two to three years ago. This continuance must be attributed to failure of technique in vaccination and to non-vaccination. As to the first point, some degree of failure must be expected in prevailing rural conditions especially, and it is largely associated with physical difficulty. It is not thought that the vaccine is not potent, since considerable care is taken in the manufacture and control of lymph. As to the second point, this occurs through evasion and also in certain instances owing to actual antipathy to vaccination. However, for some time now attempts have been made to achieve the vaccination of the population on a routine basis, through villages, schools, clinics, and so on, and this is gradually achieving greater success. Outbreaks now tend to be more localized and confined and generally easier of control.

More research into the question of propagation of these conditions is required and will be undertaken. The matter as concerns dysentery has already been discussed.

Preventive inoculation against the enteric group is offered, using a vaccine manufactured at the Government Laboratory, and is widely practised. Its effectiveness is beyond doubt.

Apart from this, however, reliance is largely placed upon improvement of hygiene and sanitary measures, and the proper control of foodstuffs, which is a subject receiving much attention.

(2) General Measures of Sanitation

Sanitation in urban areas has continued under the control of a Municipal Council in Nairobi, Municipal Boards at Mombasa, Nakuru, Eldoret and Kisumu, and under District Commissioners and Township Committees in the smaller townships and trading centres. Without exception, authorities have been faced with expected post-war problems in addition to the ever present problems peculiar to individual districts, such as water and sewerage, town planning and malaria control.

Perhaps the most pressing problem in all districts has been the need for housing accommodation for the people of all races. In spite of the limited number of skilled workers available and the lack of building materials, constructional work has proceeded apace, but to a degree totally inadequate to meet the demand. African housing, in particular, has given Local Authorities cause for great concern and schemes of varying magnitude have been introduced and others are in course of preparation. Private builders have endeavoured to cater for European and Asian requirements and the number of plans submitted for approval by prospective builders in the main towns as compared with 1945 indicates the extent of the expansion. Plans scrutinized in Nairobi increased from 633 to 1,116, and in Mombasa from 432 to 750. Nevertheless, the position remains acute with conditions of overcrowding that call for the greatest attention in the prevention of epidemic diseases.

Enforcement of rules made under the Public Health Ordinance to govern the preparation, manufacture and sale of foodstuffs has produced gratifying results. Improvements have been introduced in many of the old established businesses and others of the war-time variety created to meet the shortage of imported products have been compelled to close because of failure to comply with conditions imposed by the rules. With keener competition and a public more discriminating than has been possible in the past, further progress in this direction can be anticipated. With a sudden drop in military demands and the release of stores from different sources, increased vigilance has been necessary in the inspection of foodstuffs and most authorities reported condemnation of canned, bottled and other foods in various quantities. Samples of food and drink have been submitted to the Government Analyst regularly and legal proceedings were instituted when these were reported to be below recognized standards.

The greatest co-operation has existed between the military and civil authorities in most matters, but unfortunately this has not always extended to the evacuation of camps. The condition of vacant camps left much to be desired and gave grave concern to civil officers responsible for mosquito control and sanitation. It is realized that the demolition of buildings and the disposal of materials of value take time, but when malaria, plague and other dangerous diseases are always probable, a quick return of camp sites to original conditions is highly desirable. Towards the end of the year arrangements were in hand to notify civil authorities when certain camps were no longer required, so that inspections and recommendations could be made prior to final closing.

If no great headway can be reported over previous years in conservancy services it can at least be said that they have been maintained at a satisfactory level. Little improvement has taken place in the supply of durable equipment, without which high standards of efficiency cannot be attained, but it is anticipated that the position will change in this connexion during 1947, and that both mechanized and hand appliances will be in freer supply.

The difficulties of refuse and night soil disposal have always been greatest in the smaller centres, where regular supervision is not available. This has been appreciated by the Member for Health and Local Government, who has called for detailed proposals and estimates for improvements at all townships and trading centres for which conservancy services must be regarded as a Government responsibility. Officers of the Administration and Medical Departments have co-operated entirely in preparing proposed schemes.

The solution of many health problems remains in the provision of sewerage, but the scattered planning of most towns renders the introduction of schemes difficult and extremely expensive. Only in Nairobi is progress being made and the system is limited to certain areas, where approximately 16,000 linear feet of sewerage were added during the year. Septic and conserving tanks must be tolerated for many years to come.

Mosquito control continued on a wide basis and *Aedes* indices in particular have been maintained at a satisfactory low level along the main lines of communication. The auction of military plant and vehicles has not helped to ease the burden of control, dumps of used lorries, cars, tyres and spare parts being in evidence in and around most towns throughout the Colony. Workshops have been set up whereat sound parts from ex-military cars and trucks are made up into road-worthy vehicles, whilst materials of no value make up the dumps where mosquito breeding is always a potentiality.

In native areas, in addition to normal routine preventive measures, progress towards healthier conditions has proceeded at a pace that could not have been visualized a few years ago. In fact, so rapid is the change from old to new type buildings, particularly in native trading places, that lack of adequate control has given cause for some concern. Contributory factors to the advancement are many, not the least being years of health propaganda during periods when Africans had not the means nor the energy to do more than to listen, periods when natural and economic circumstances were very much against them. Local Native Councils have also played a part and a stage has been reached when members are ever ready to support measures, financially and otherwise, if directed towards the better health of the people. The close co-operation of officers of the Administrative, Agricultural and Medical Departments may be added as a cause for the impetus, together with a period of financial prosperity and ambition gained by the African during and since the completion of the war.

It is not surprising that the most striking development has been an expression of this outlet by building, for example, at markets, perhaps better described now as African trading centres. In most districts these bartering places of many years ago are changing to the market square, surrounded by buildings wherein the artisan, the butcher, the baker, the restaurateur, the hairdresser and other traders cater for public demand. Applications for building plots have greatly increased and although it cannot be said that new buildings would conform fully to the requirements of township building by-laws the standard of construction has risen to a much higher degree than ever previously existed. The African has taken advantage of his training in the school, in the workshop, in the Services and, in his own small way, in the field of commerce. His main desire appears to be to trade, and although progress is being made outside the trading areas, it must be admitted that housing and other progressive measures appear to be somewhat subordinate to the business urge.

In the change from the old type business premises to the new, stone, lime, cement and iron are taking the place of poles, mud and thatch and lock-up stores are giving way to shops, living quarters, kitchens and latrines. This has strained the ability as well as the capacity of public health staff, especially in districts where African personnel only is available for work in the field. Not only has assistance with lay-out design and drainage been necessary, help with foundations and structural work generally has also had to be tackled for lack of assistance from other sources. Within the limits of their training, members of the African staff have dealt with the situation at well as could have been expected and their efforts continue. The provision of water supplies, slaughtering places, public latrines and the disposal of wastes have not kept pace with the rate of development, but these matters are under review by local authorities.

Although many good dwelling houses in permanent materials can be seen, wattle and daub structures still predominate. There is a marked change, however, in the type of building being erected. The rectangular hut of two and three rooms, with walls adequate in height and with window space and ventilation, is becoming more popular and even the round hut is improving in dimension and in finish. It is in this improved round hut that the expression of progress is visible, progress that will ultimately result in an all round improvement in the living conditions of the people. A good stone or brick house illustrates an advance by an individual over his neighbour and without doubt it has a propaganda value. But the traditional round huts still accommodate the masses and any noticeable general improvement in the huts of a district is a step nearer to the elimination of the many formidable infectious diseases.

In the rural areas occupied by a poor and primitive people it is no easy matter to solve the problem of sanitary control. In this connexion a system of village cleaning in certain districts has been the most spectacular and effective measure so far carried out. Introduced originally by Local Native Council resolution to combat plague epidemics, it has continued as a routine duty and results are still visible even in districts where supervision was relaxed by force of circumstances during the war. The resolution calls for a clear area around villages of not less than 30 ft., whereupon grass only can be grown. The provision of grass prevents erosion of the soil and grazing in a minor form for stock. Great numbers of present day villages stand out in contrast to the old types, now disappearing, which more often than not were concealed in the bush, amidst the dirt and squalor of the villagers.

Seldom is opposition met with in routine village cleaning, the value of the work being appreciated by the communities as well as by their councillors. Whereas action was originally undertaken by public health staff, now this staff is supervisory only. Local Native Councils have gone further than this Department could have once hoped for by appointing village supervisors, one to each location. These supervisors are generally under the charge of European Health Inspectors and although they have had no extensive training they perform an extremely useful function. They are in constant touch with the people and always alive to the necessity to report the presence of excessive sickness and to take part in measures directed against plague, smallpox and other diseases. They encourage the construction and use of latrines, the provision of pits for the reception and composting of refuse, and expound the advantages of the better type hut. They form the link between the people and the Health Inspector, to whom they report works for which they may not be deemed as qualified to carry out.

Much consideration has been given by local authorities to the provision of water supplies in areas where none exists, whilst the provision of clean water where only polluted supplies are available and the sinking of wells where water may be easily obtainable, are functions often undertaken by officers of the Medical Department. The protection of sources of supply to prevent fouling by cattle, humans and surface water is no longer a novelty. It is now an accepted necessity in most districts, many additional supplies having been dealt with and many existing ones being kept in a proper state of repair. Local Native Councils contributed for the continuance of this work.

Propaganda continued to be an important part of public health activity. In one district the Medical Officer of Health, in conjunction with the Health Inspector, commenced a series of "Health Bulletins", with the object of spreading knowledge of various dangerous diseases and their causes to the people by way of the more literate chiefs, headmen, teachers and Government employees. Printed in English and Kikuyu, an average of 500 copies were distributed monthly and covered such subjects as "Anthrax", "Plague", "Dysentery", "Flies and Disease", "Cleanliness", "Gonorrhoea", "Relapsing Fever" and "Tuberculosis". Publication in other vernaculars followed and the Information Officer, appreciating the value of the "Bulletins", followed with a translation into Ki-swahili for publication in "Pamoja", an official leaflet issued by the Kenya Information Office and distributed throughout the Colony. The popularity of the "Bulletins" has reached a stage with which the Local Health Officer can no more cope, and arrangements are in hand for the Information Officer to undertake all future publication.

The making of auxiliaries to housing in the form of doors, windows, tables, chairs and the burning of bricks or dressing of stone presents no problem in some districts, but in the more backward areas efforts towards the improvement of living conditions have been handicapped for lack of artisans skilled in such work. To deal with the deficiency in South Kavirondo one Health Inspector, assisted by the Local Native Council, created his own training establishment, which has now developed into a Welfare and Development organization, attracting the attention of the Director of Training. Commencing with a few apprentices working in conjunction with Health Office staff, the scheme soon extended beyond the original intention of training workers to meet the demand for housing, trade premises, furniture and materials without which better living conditions could not be obtained. Partly trained artisans who had reverted to village life and demobilized soldiers varying in technical ability were called upon. Workshops were set up and post-war development schemes instituted by the Local Native Councils were tackled. During April the organization, including apprentices, numbered 24 carpenters, 21 assistant carpenters, 33 masons, 39 assistant masons, five painters, four thatchers and seven men skilled in well construction. By the end

of the year several of the artisans had set up on their own account at trading centres, the first indication that the aims of the scheme were being achieved.

The scope of the scheme was greater than the Health Inspector could be expected to cater for and proposals were made for the Department of the Director of Training to take over.

Whenever possible the closest contact has been maintained with schools' staffs and considerable assistance was given with the planning and construction of school premises, varying in type from wattle and daub to good sound stone structures. Many plans were prepared, quantities worked out, permits applied for and the purchase of materials arranged, all with the object of encouraging lessons in practical hygiene. In the bush school curriculum hygiene is taken very little further than the washing of hands and the general cleansing of the person, and very often these are carried out more in theory than in practice. Lack of water sometimes creates a problem. Nevertheless, year by year conditions keep on improving and there is no doubt that children are given opportunities during school hours to enjoy cleaner surroundings, see better type teachers' houses and use latrines, conditions that may be very different from their home environment.

In certain areas regular school inspections have been introduced and lectures concerning health matters have been given by public health staff.

Whilst it cannot be denied that much headway has been achieved under the existing organization, future progress must emanate from Health Centres, as recommended and dealt with in detail in the reports of the Development Committee. Past activity has been governed to a great extent by the necessity for posting the limited trained staff available to districts where the maximum results could be expected, with a concentration of efforts in the advanced areas and neglect of the more backward areas in consequence. In thickly populated areas, ripe for progress, preventive as well as curative services have been rendered, but in the backward and scattered areas essential medical services only could be provided, although the need for preventive measures has been every bit as great.

With selective siting of Health Centres, varying in size and nature in accordance with the requirements of districts, a co-ordination of services will be attained to a degree much greater than has been possible in the past. From these centres of medical attention, laboratory service and health instruction, services will radiate to the schools, the homes and the work-places of the people in the form of health lectures, technical assistance and instruction in domestic hygiene, in addition to the application of general socio-preventive measures.

With the establishment and gradual extension of Health Centres throughout the Colony a continuous supply of trained personnel will be called for, and important developments are taking place in this connexion. In addition to the training of ex-askari as sanitary assistants, a scheme already well under way, arrangements are in hand for an expansion of the Medical Training School to include courses for the training of African Health Inspectors, as well as of greater numbers of medical auxiliaries and nurses. The integration of the Training School and Health Centres in the Department's Development Scheme has already been discussed. It now remains to press forward with the establishment of Health Centres if real achievement in the furtherance of health measures is to be attained.

(3) School Hygiene

The posting of permanent medical and health staffs for full-time school duties has not yet been possible. It may be mentioned, however, that a great amount of attention to schools for all races and in most areas was given in the course of the normal routine duties of Medical Officers, Nursing Sisters and Health Inspectors, and that the introduction of a more permanent service has been given much consideration and it is hoped that it will be accomplished as a part of the general departmental development scheme.

(4) Labour Conditions

Marked improvement in the conditions under which the labouring classes live and work can be reported in many instances, although a stage of all-round satisfaction in this respect has by no means been reached. Improvements in African welfare, housing and amenities in general have been many, but not entirely adequate to keep pace with the conditions created by the expansion of labour forces engaged on the many development works.

Close liaison has been maintained between the Labour and Medical Departments and convictions for the housing of labour in insanitary premises have been recorded. Action has been possible at many temporary type camps in districts, whereat inspections were not previously possible, because of the limited staff of the Labour Department. There is, however, a great deal yet to be accomplished as regards permanent and semi-permanent housing and camps.

The rationing of labour has been given increasing attention also, and no doubt is reported fully in the Annual Report of the Labour Commissioner.

An important proposal is that to attach a Senior Medical Officer to the staff of the Labour Commissioner. There is unquestionably much that will come within the scope of such an appointment in regard to labour problems.

(5) Housing and Town Planning

As previously mentioned, housing for the people has continued to create problems for all local authorities and although new buildings in large numbers appear with gratifying rapidity it is not yet possible to visualize the time when supply will be equal to the demand.

A satisfactory feature in the new housing schemes being erected by Municipalities and Government is the attention that is now being given to lay-outs, designs, facilities for better housekeeping and general amenities for adults as well as for children. The more modern schemes with houses of varying design, individual kitchens, paths and, in a few places, flower beds, may not have reached the stage of garden city standards, but they do stand out in contrast to the first efforts to provide housing accommodation for Africans, where unattractive rooms in long rows and open communal kitchens, situated in bleak compounds, are the main distinguishing features.

The preliminary report of the town planning team from South Africa, under Professor Thornton-White, has been submitted to the Mombasa Municipal Board for consideration and, if adopted, will result eventually in the creation of a town worthy of the Colony's main port and eliminate the insanitary and congested conditions of the old town that have for so many years been a worry to the authorities.

The Government Town Planning Adviser has been active in the townships and trading centres, where little attention to town planning was possible in the past. Preliminary plans for proposed schemes have been under discussion by representatives of the Departments concerned.

(6) Food in Relation to Health and Disease

A—FOOD SUPPLIES

Inspection and control of food has been carried out as far as the availability and disposition of public health staff permitted and close co-operation existed between the Veterinary and Medical Departments, with particular regard to the inspection of meat.

In general, the availability of basic food supplies was on a reasonable level on a comparative basis. Mention has already been made, however, of the great necessity for careful and thorough investigation of dietetic needs and agricultural policy as regards the African population.

MEASURES TAKEN TO SPREAD THE KNOWLEDGE OF HYGIENE AND SANITATION

Apart from normal routine propaganda measures and the publication of health literature on a limited scale, availability of staff and materials did not permit of the introduction of major exhibitions to spread the knowledge of hygiene and sanitation. A certain amount was done by the Military Authorities in this connexion, however, for which available departmental propaganda material served a useful purpose, especially for display to "Askari" about to return to their respective native areas. The need for continued and more extensive propaganda is appreciated and a resumption of exhibitions not below pre-war standards is being aimed at. Once again, however, the success attained by the efforts of the Health Inspectorate is stressed. With the ultimate establishment of Health Centres propaganda can be undertaken on a much more personal and much wider basis.

MARKETS, DAIRIES AND SLAUGHTERHOUSES

In Municipal areas and the larger townships markets have been established and well maintained for a number of years. In the small townships, trading centres and in native areas adequate resident staff does not exist and the position is much more complex. Little

revenue accrues and the services provided suffer in consequence. Proposals for improvements have been submitted where the responsibility is that of Government, and District Commissioners have taken steps within the limit of their powers and finances where markets are the concern of Local Native Councils.

Whilst there are many dairies where proprietors make efforts to conform to reasonable standards of construction and cleanliness, much has still to be done before an all-round improvement in milk supply can be attained. Several factors contribute to the inefficiency of control, and not the least being the lack of a discriminating public. Milk has a ready market, irrespective of the conditions under which it is produced, and there is no more remuneration for the good producer than for the bad. Quantity rather than quality still satisfies masses of the population, with little hope at present for elimination of the dairyman who aims mainly at profit in favour of the one who may prefer to attract the public with a supply of wholesome milk. Control is difficult, dairies being mostly situated in areas where frequent inspections are not possible and due to the fact that many of the owners are mainly interested in cattle breeding, with the disposal of surplus milk as a profitable sideline only.

Ways and means of dealing with the problem are constantly under discussion by Local Authorities, and as the staff positions improve more inspections and enforcement of legislation, where it applies, may be possible.

As in the case of markets, the larger Local Authorities have established slaughterhouses and meat is inspected before being exposed for sale to the public. These premises have, on the whole, been well maintained and supervised, and in some cases improvements have taken place. In the rural areas there are ever present problems, mainly due to the lack of supervisory staff. Nevertheless, the responsible authorities are giving the matter attention and in some districts small buildings in permanent materials have been constructed wherein slaughtering takes place instead of, as previously, being carried on in the bush. African staff is under instruction to visit on market days, when slaughtering is most likely to occur, and the nucleus of a system of meat inspection has been set. With an extension of the system the need for laid-on water will be called for to replace the present methods of obtaining supplies by manual effort from adjacent rivers and streams.

B—TRAINING OF AFRICAN SANITARY PERSONNEL

Within the training scheme set up for demobilized African askari, fifteen men were offered training as Sanitary Assistants. The number was limited owing to teaching facilities and because it was intended to open a school for the training of African Health Inspectors. These men, after a period of training for nine months, were absorbed into the Health Section of the Department and have fulfilled a useful purpose.

A great deal of training and instruction of health and sanitary personnel, including auxiliaries of all kinds, is undertaken in native areas by the Health Inspectorate, and over the past few years, with the expansion in staff employed by Local Native Councils, a very useful cadre has been built up.

The position, however, is unsatisfactory inasmuch as it has not been so far possible to undertake systematic and full training for African Health Inspectors up to an overseas standard of The Royal Sanitary Institute, such as is undertaken at the training school in Uganda. This school has been closed to candidates for training from other territories. It has, therefore, become necessary to consider local training, and in this respect the rebuilding of the Medical Training School on a much enlarged and wider basis has high priority in the Department's development scheme. In this school will be undertaken the training of local applicants with the necessary academic background as Health Inspector, and it is confidently expected that this will begin in 1947.

C—RECOMMENDATIONS FOR FUTURE WORK

Recommendations for future work have really been set out in the report of the Development Committee, and it must remain to see whether these can be implemented in full, taking all factors into consideration.

It is, however, necessary to draw attention to the incessant demands for more and more hospital accommodation, which come from all quarters. Clearly the time is approaching when it will be necessary to consolidate the position in this respect, even though saturation is not reached. It is difficult to resist such demands and, indeed, the Department is not unfavourable to them, but financial and other considerations have to be taken into account.

It is, therefore, on this count as well as others, extremely urgent that an expansion of promotive health services be brought about as soon as possible and every energy should be concentrated on this.

It is, of course, required that a good deal of improvement of facility and amenity must be effected at most hospitals. In the constructional programme the important considerations are the completion of the Group Hospital and the building of the Medical Training School in Nairobi and construction of new hospitals at Mombasa, Voi and Malindi, all of which are sadly needed.

On other matters it is most necessary that improvement in facilities for the treatment of tuberculosis be provided and as a first step it is intended to carry out a survey to ascertain the true prevalence of the disease and to formulate plans for new treatment centres as well as for preventive measures.

Venereal disease, admittedly, needs to be dealt with on a wider scale of treatment, but this depends very largely upon the recruitment of more staff, without which it is impossible to embark on any new projects at the moment.

IV.—PORT HEALTH AND ADMINISTRATION

(1) General

The ports on the Kenya seaboard are as follows:—

Kilindini (Mombasa), Mombasa (Old Port), Lamu, Malindi, Kilifi and Vanga.

Kilindini is the only port at which large ocean-going ships call. As far as Kilindini is concerned the year has been one of gradual return to normal. It has been marked by the return in a steady stream of the East African Forces overseas. This activity is now at an end and for the past few months Kilindini Harbour may be said to have been a peace-time port once more. One abnormal activity remains, namely the repatriation from Mombasa of Italian prisoners of war and civilian internees and Polish refugees. The last of these should leave early in 1947.

The Navy has ceased to use Kilindini as a base and now maintains only a Boom Defence Depot.

Mombasa Old Port has a considerable seasonal trade in dhows and small motor vessels. Lamu accommodates a small number of ocean-going dhows. Malindi, Kilifi and Vanga deal mainly with coastal dhows and a very few trans-ocean dhows.

Unless otherwise stated, the measures described below are those carried out by the Port Health Officer in Kilindini and Mombasa Old Port.

PORT HEALTH ORGANIZATION

The staff during the year was as follows:—

- (a) Port Health Officer;
- (b) Assistant Port Health Officer;
- (c) Port Health Inspector;
- (d) Entomological Field Officer;
- (e) Clerk;
- (f) African Sanitary Assistants.

The staff was distributed as follows:—

Mombasa.—African Sanitary Assistants, Grade II, 2; Grade III 11.

Lamu.—African Sanitary Assistants, Grade III, 2.

Malindi.—African Sanitary Assistants, Grade III, 1.

Kilifi.—African Sanitary Assistants, Grade III, 1.

Vanga.—African Sanitary Assistants, Grade III, 1.

The Port Health Officer, Mombasa, and Medical Officer of Health remain the same person. In fact, with the Infectious Diseases Hospital and the Municipal Maternity and Child Welfare Clinics under his charge, he is responsible for all health services in the town.

A second Medical Officer fills the posts of Assistant Port Health Officer and Assistant Medical Officer of Health and is responsible for routine duties in connexion with the clearing of ships and the supervision of the Infectious Diseases Hospital and the male Venereal Diseases Clinics.

A Port Health Inspector is in charge of Mosquito Control and general sanitation in Kilindini and Mombasa Old Port.

The Port Health Officer is in administrative charge of anti-*Aedes* measures along the whole coastal area, which includes the small ports of Lamu, Malindi, Kilifi and Vanga. An Entomological Field Officer supervises this work.

(2) Application of the International Sanitary Convention of 1944

Measures taken under Article 6, i.e. Examination of Rats

Rat trapping is carried out by the Sanitary Assistants. In Kilindini, where the menace is the greatest, the trapping is systematic and intensive. Figures for rats so caught in Kilindini during the past three years are as follows:—

	1944	1945	1946
<i>Rattus rattus kijabius</i>	1,785	2,193	1,965
<i>Rattus norvegicus</i>	114	91	53
Mice	2,819	2,683	2,321
Totals	4,718	4,967	4,339
Spleen smears examined	320	148	335

All spleen smears were found negative to *P. pestis*.

Since August, 1946, figures of the number of spleens examined with the results have been cabled to Singapore.

Measures taken under Article 8, i.e. Methods of Notification

The major five diseases are included in the Colony's list of notifiable diseases. No cases of these diseases are present in the port area at the time of writing, but in the event of a definite or suspected case of plague, cholera, yellow fever, typhus or smallpox being discovered in Mombasa or its vicinity, information would be sent from the Port Health Office by the speediest means to H.B.M. Special Commissioner, S.E.A., Singapore and the Hon. Director of Medical Services, Nairobi.

Measures taken under Article 13, Measures Adopted to Prevent the Exportation of Disease; i.e. the Embarkation of Individuals Showing Symptoms of any of the Five Major Diseases

The Port Health Officer does not medically examine every person embarking from the ports under his supervision. On the other hand, all shipping agents make it their business to refuse accommodation to any traveller not in possession of valid yellow fever and small-pox vaccination certificates, and immediately report by telephone to the Port Health Officer particulars of any sick person wishing to board ship. This person is then examined.

In the event of an outbreak of one of the five major diseases occurring in the vicinity of the ports, special measures would immediately be taken to prevent the embarkation of persons showing symptoms of the disease, and also of contacts of diagnosed cases.

Special Preventive Measures Against Infectious Diseases

Plague.—

It is compulsory for ships to have rat guards attached to all lines connected with the shore. In addition, there is the rat catching organization in Kilindini, as described in “*Measures taken under Article 6*”.

Cholera.—

No case of cholera has been reported in Kenya Colony, but in this connection it may be stated that the Mombasa water supply used at Kilindini and the Old Port is a piped, chlorinated supply of high quality.

Yellow Fever.—

Extensive measures are taken to prevent mosquitoes gaining access to ships. In the various areas these are as follows:—

Kilindini.—The port area is divided into sections, each the responsibility of an African Sanitary Assistant; general sanitary measures are carried out by this man, including control of all types of mosquitoes. *Aedes aegypti* were found breeding in the port area in 1944 ten times, in 1945 three times, and in 1946 26 times. The large number of cases of breeding found in 1946 may be accounted for by the change in the method of *Aedes* Control adopted in December, 1946. It was felt that the system of incorporating *Aedes* Control in the general duties of the African Sanitary Assistants might lead to the former being neglected. Accord-

ingly, on 1st December, the port was included in the Yellow Fever Control Organization of the township and two men from the Organization were posted permanently in the port. Fifteen cases of *Aedes ægypti* breeding were found during the month.

The *Aedes* Control of the port is supported by a highly organized system of control throughout the Municipal area, based on a weekly house-to-house inspection combined with outside searching.

Mombasa Old Port.—*Aedes* Control in the Old Port is largely a matter of maintaining control on dhows which are in the port for several months of the year. During their stay in the port they are not permitted to use their usual water tanks, but are compelled to use a single protected drum which is replenished daily. In addition, if the covers on the permanent tanks are unsatisfactory, before being permitted to leave the port dhow masters are compelled to fit approved mosquito-proof covers. As these tanks differ so widely in type, no standard cover has been designed, each vessel being treated as a separate problem. On their departure to Arabia or India, the water tanks are filled at the last possible moment and they are kept covered, as far as practicable, until the vessel sails. Also, disinsectization is carried out immediately prior to departure, the aim being to ensure that any dhow bound for Asia will not leave the Kenya coast either with *Aedes* adults or larvæ on board. Following the final inspection of the dhow, a Mosquito Clearance Certificate is issued. By arrangement with the Customs Department, Customs clearance is withheld until this certificate is issued, thus preventing dhows sailing prior to disinsectization.

Lamu, Malindi, Kilifi and Vanga.—*Aedes* Control in these ports is similar to that adopted in Mombasa. Treatment of dhows is the same as that in Mombasa Old Port.

Aircraft.—Mombasa being the last southbound stop on the East coast route before leaving the yellow fever endemic area, anti-yellow fever inoculation certificates of passengers are checked and the aircraft disinsectized with Freon Aerosol bombs.

The number of aircraft so dealt with were :—
1944, 154; 1945, 151; 1946, 110.

Exanthematous Typhus.—

No cases of this disease have been reported in this country, but in the event of its discovery an adequate organization to delouse suspects before embarkation could be set up immediately.

Smallpox.—

There is no exportation of old garments and rags from this country.

Measures taken under Article 15, i.e. Preventive Measures against Importation of Infectious Diseases

In general, all shipping from ports infected with one or more of the five major diseases is boarded by the Port Health Officer and careful inquiries are made. Particular measures taken are as follows :—

(1) *Plague.*—Vessels on arrival are subjected to a rat inspection unless the Deratization Certificate is of very recent date (i.e. two or three weeks old). Deratization is performed where required. This is described later in the paragraph “*Measures taken under Article 28*”.

(2) *Yellow Fever—In Ships.*—Vessels are inspected as soon after arrival as possible for the presence of adult mosquitoes or larvæ. The presence of adult mosquitoes on ships arriving in the port is becoming increasingly rare, but in the unlikely event of adult mosquitoes being found the captain is advised on methods for their elimination.

The following table gives the incidence of *Aedes ægypti* in vessels inspected during the years 1941 to 1946 :—

	1941	1942	1943	1944	1945	1946
ADULTS—						
Number of Vessels inspected ..	419	495	304	302	277	303
Number with mosquitoes ..	75	72	52	33	5	—
Number with <i>A. ægypti</i> ..	15	16	3	2	2	—
Index—all species	17.9	14.5	17.1	10.9	1.8	—
Index— <i>A. ægypti</i>	3.6	3.2	2.6	0.6	0.8	—
LARVAE—						
Number with larvæ	23	45	16	3	4	11
Number with <i>A. ægypti</i> ..	14	30	9	1	1	7
Index—all species	5.5	9.9	5.2	0.9	1.5	3.6
Index— <i>A. ægypti</i>	3.3	6.0	2.9	0.3	0.3	2.3

In Dhows.—All dhows on arrival are immediately inspected for mosquito adults and larvæ. Whether larvæ are found or not at all, the ship's water tanks are emptied immediately. They are then stored or covered in such a manner as to exclude rainwater and, as already stated, may not be used again for the rest of the dhow's stay in the harbour. At the same time as the initial inspection is made the dhow is thoroughly "flitted" throughout.

Since the Port Health Officer, Mombasa, in 1945, became responsible for yellow fever control in all ports along the Kenya coast, figures have been kept showing the mosquito infestation of coastal and trans-ocean dhows arriving in Mombasa. These are tabulated below:—

COASTAL DHOWS		TRANS-OCEAN DHOWS	
Dhows Inspected	<i>A. ægypti</i> breeding found	Dhows Inspected	<i>A. ægypti</i> breeding found
1945 1,498	10	195	75
1946 1,417	28	198	101

The low incidence of breeding in coastal dhows is noteworthy. It may be assumed that at least a portion of this difference is due to the *Aedes* Control up and down the coast.

Smallpox.—

All vessels from known infected ports are boarded and the individual examination of every passenger as to their vaccinal state is carried out by the Port Health Officer or his assistant. In this respect it should be noted that in no case is a smallpox vaccination certificate accepted as evidence of immunity to the disease without the support of good vaccinal scars. Those persons with inadequate scars or invalid certificates are re-vaccinated on board ship and then landed under surveillance.

On the 18th of February, 1946, a case of smallpox was discovered in a transit passenger on the s.s. *Hong Kong* which had left Bombay on the 6th February. The next day a steward was removed from the ship suffering from the same disease. The ship had arrived on the 17th and had been boarded in the usual way by the Assistant Port Health Officer. No cases of illness having been reported by the ship's surgeon, the Assistant Port Health Officer carried out his usual routine examination of the vaccinal state of passengers for Mombasa, and having completed this to his satisfaction had given the ship pratique. All passengers for Mombasa had left the ship by the night of the 17th, that is to say, before the smallpox case was discovered.

On the diagnosis of the disease being confirmed, all passengers remaining on board and all members of the crew were vaccinated and as an additional safeguard new passengers joining the ship were also vaccinated. Subsequently, all persons from the shore whose business had led them to board the vessel underwent vaccination. All Medical Officers of Health of districts to which disembarking passengers were going were informed of the occurrence, and the Port Authorities to which the ship was subsequently going were also notified. In theory, the considerable number of close contacts of these two cases, which were afterwards scattered over East Africa, might have produced serious consequences, but in fact no cases of smallpox have been reported as arising out of this incident. Some of the credit for this must go to the system of careful scrutiny of the vaccinal state of all landing passengers and their revaccination in the event of this being unsatisfactory.

It may be stated here that strictly speaking the smallpox certificates produced by passengers (especially deck passengers) from India are in over 99 per cent of cases totally valueless, in that approximately only one in a hundred ever states the type of reaction following the vaccination. In the circumstances, rigid insistence on adequate and recent vaccination scars is more than justified.

Special Note—Relapsing Fever.—

Though not one of the five major diseases, since the occurrence of an epidemic of louse-borne relapsing fever in the Coast Province following the arrival of certain Arabian dhows in February, 1945, a particularly careful look out has been kept for cases of relapsing fever on dhows arriving in Mombasa Old Port. Temperatures of all passengers and crews are taken at the first inspection. At the same time examination is made for louse infestation. If any person on a dhow is found to be suffering from fever the vessel is maintained under provisional restraint until the disease is diagnosed. Those infested with lice are treated with D.D.T. dusting powder.

The Medical Officer in Charge, Infectious Diseases Hospital, in his report for 1946, records ten cases of relapsing fever admitted to hospital from dhows arriving from Arabian ports. These occurred in the early part of the year during the 1945/1946 dhow season; though no evidence was forthcoming as to whether this was louse-borne or tick, the probability is that it was the former. So far, this dhow season of 1946/1947 has produced no case of relapsing fever. No relaxation of precautions, however, is permitted. Thus, in the case of dhows arriving at the Old Port without adequate sanitary guarantees, there is a stiffening of the precautions over and above those already described. Whatever the state of health of passengers and crew on such vessels, these ships, without exception, are not admitted to pratique for fourteen days from the date of arrival; during this period daily temperatures of all persons on board being recorded and passed on to the Assistant Port Health Officer.

Measures taken under Article 57

Paragraph (a) of the Article recommends the maintenance of a port medical service. This may be said to exist in the form of the Kilindini Dispensary, supported by the European and Native Hospitals.

In fact, however, most medical treatment of seamen is carried out by local general practitioners, to whom the seamen are referred by the shipping agencies.

Kilindini Dispensary is principally concerned with the treatment of venereal disease in merchant seamen and figures for the treatment of V.D. at this Dispensary are given below, divided into ordinary patients and merchant seamen.

				European		Asian		African
<i>Merchant Seamen—</i>								
Syphilis	...	...	...	10	...	2	...	—
Soft Chancre	...	...	...	6	...	—	...	—
Gonorrhoea	...	...	...	19	...	5	...	3
<i>Ordinary—</i>								
Syphilis	...	...	...	—	...	—	...	41
Soft Chancre	...	...	...	—	...	1	...	—
Gonorrhoea	...	...	...	—	...	—	...	80
Urethritis	...	...	...	—	...	—	...	10

The figures for merchant seamen do not constitute all those treated for V.D. in Mombasa as the seamen of one of the largest Shipping Agencies are treated by their own general practitioner. Inquiries among merchant seamen as to the reason for this have elicited the explanation that most merchant seamen have a rooted objection to receiving treatment at any establishment which savours of a "clinic". This distaste is a common one and is frequently to be found in Britain.

At the end of the year the experiment was made of admitting one European merchant seaman to the Infectious Diseases Hospital for penicillin therapy for gonorrhoea. The experiment was satisfactory and will be repeated.

(3) Application of the Public Health (Port Health) Regulations, 1923

One point of interest arises out of the application of the Regulations.

Importation of Secondhand Clothing.—

Regulation 20, Clause (2) of the Public Health (Port Health) Regulations, 1923, requires that all consignments of secondhand clothes intended for sale or disposal in the Colony shall be accompanied by a disinfection certificate. Clause (3) of Regulation 20 requires that, failing production of the certificate, the consignment of clothes shall be disinfected at the port of entry. No facilities for such disinfection exist at Kilindini. Accordingly, in the past, when consignments of clothing have arrived without certificates they have been carefully inspected and as all of them so far have been in good condition they have been passed through without further delay.

Recently, however, it has been found that an increasing number of consignments of such clothing is being imported without the required disinfection certificate. Since this may be deliberate, it is the intention in 1947 to inform all importers that after a reasonable time has been allowed for them to make necessary arrangements, no further consignments of second-hand clothing will be admitted to the country without a valid disinfection certificate.

Consignments unaccompanied by the required certificate will have to be destroyed or re-exported.

V.—STATISTICS

(a) Shipping entering the port during the year:—

	Number	Tonnage	Number	Tonnage
	1945	1945	1946	1946
STEAMSHIPS—				
Overseas	444	1,746,720	457	2,235,944
Coastal	74	25,288	153	38,865

(b) Empire Flying Boats	232
(c) Sailing ships, including native vessels—	
Number of foreign dhows entering the port	452
Number of coastal dhows entering the port	1,133
(d) Vessels medically inspected on arrival—	
Steamships	152
Sailing ships, including native vessels	274
(e) Vessels arriving in port infected or suspected—	
Steamships	1
Sailing ships, including native vessels	5
(f) Vessels placed under quarantine restrictions or subjected to special measures—	
Steamships	1
Sailing ships, including native vessels	5
(g) Passengers medically examined under special smallpox regulations—	
Steamships	17,853
Sailing ships, including native vessels	2,829
(h) Passengers landed under surveillance—	
Steamships	990
Sailing ships, including native vessels	1,225
(i) Bills of Health issued—	1,065
Article 25: number of ships deratized	16
Number of ships exempted from deratization	29

VI.—MATERNITY AND CHILD WELFARE

The popularity of these services continued to be high, though it was unfortunate that owing to staff difficulties, both Government and Municipal, the services in urban areas had to be somewhat contracted. The interest of Local Native Councils, who, in native areas are solely responsible financially, was maintained; and, as usual, proposals were made for extension. Difficulty also arose in obtaining a sufficient number of trained African midwives to staff maternity wards throughout the Colony, and the deficiency is likely to be real for some time.

As in the case of general beds, the number of maternity beds throughout the Colony is insufficient for the demand, but the proposals of Local Native Councils in native areas and of urban local authorities should, in a relatively short time considerably improve the position to a satisfactory degree.

In regard to the needs of the Asian community, the Indian Maternity Hospital in Nairobi, which is managed by a committee under the aegis of the Lady Grigg Welfare League, and which is subsidized by Government and the Nairobi Municipal Council, continued to perform an excellent function. This is not only a maternity hospital, but also a training centre for Indian midwives. Facilities for Asians elsewhere are not good, but it is proposed to use a bequest of £30,000 to build an Indian Maternity Hospital in Mombasa in conjunction with the new combined Asian and African Hospital. Maternal and Child Welfare Clinics for Asians are maintained at Nairobi and Mombasa.

The valuable work performed by Mission hospitals, both in maternity services and the training of African midwives on a small scale must not be overlooked, and one of the hospitals has plans for a considerable expansion both of maternity and training facilities. Apart

from Missions, the main agencies through which maternal and child welfare services are performed are:—

The Government Medical Department.

The Local Native Councils.

The Municipal Councils of Nairobi and Mombasa.

The Lady Grigg Welfare League.

The first two may, to all intents and purposes be regarded as a combination, since while the Local Native Councils are responsible, under a system which in practice works well, for the capital and recurrent expenditure, the actual work is undertaken by Government medical and nursing staff and by African midwives whose salaries are met by the Councils.

(1) Maternal and Child Welfare Work Carried Out in Larger Towns

(a) Mombasa

As it exists at present, the maternity and child welfare services in Mombasa cater only for the African and Arab communities. As from the 1st July, 1946, the ante-natal and child welfare clinics, up till then operated by Government, became the responsibility of the Municipal Board with a proviso that a lady medical officer and health visitors would be seconded to the Board for a period of twelve months in order to give the Municipality sufficient time to recruit its own staff. Unfortunately, it was not possible to obtain a medical officer for secondment, and the position for a certain period was unsatisfactory, the work at clinics and home visiting consequently suffering. Treatment of venereal disease in women is undertaken among other activities at these clinics, and the following figures exemplify the work performed:—

Annual Attendances at Ante-natal and Child Welfare Clinics

				1945		1946
Child Welfare	...	...	...	16,494	...	18,851
Venereal Diseases	...	...	...	2,949	...	4,331
Ante-natal	...	...	...	5,312	...	6,355
Dispensary	...	...	...	23,031	...	25,298
Home Visits	...	...	...	27,790	...	32,623

As regards maternity work, the Lady Grigg Maternity Home became the property of the Board on the 1st September, 1946. The accommodation at present provides 19 beds for Africans and 4 for Arabs. The hospital is under the charge of a qualified European matron, assisted by three African staff nurses and sixteen trainee midwives, and the following figures indicate the work done during the year:—

Total admissions	...	...	...	824
Births	...	...	...	617
Premature births	...	...	...	24
Stillbirths	...	...	...	36
Caesarean section	...	...	...	3
Maternal deaths	...	...	...	5

Facilities at this hospital are becoming inadequate and consideration will have to be given to improvement and enlargement of the accommodation and staff and trainee quarters.

(b) Nairobi

The work at Welfare Centres in Nairobi also suffered owing to five months of the year passing without a Medical Officer in charge, though progress was maintained by the diligent work of the Health Visitors, with occasional assistance from the Medical Officer to the Maternity Hospital. Unfortunately, also, some changes took place among the health visiting staff, and these are not conducive to progress as the confidence of an African mother may need time and patience to obtain. However, in general, the work proceeded satisfactorily and maintains its popularity.

One feature of interest is that the general standard of education and efficiency amongst the African assistants is on the up-grade, and two well educated, certificated African midwives have been given permanent appointments as Senior Clinic Assistants and are proving invaluable in getting over to the mothers the teaching and propaganda which is the essence of child welfare work.

Work proceeds on very similar lines to elsewhere and includes ante-natal, post-natal and child welfare clinics. "Home visiting is regarded as the most important feature of the work of the Health Visitors. African women are much more responsive to tuition and advice given individually and in the familiar surroundings of their own homes, and once the Health Visitor has established an atmosphere of mutual friendliness, her influence is increased a thousandfold." This quotation from the Annual Report of the Medical Officer of Health, Nairobi, is a true and significant statement, and work of this nature will be one of the ideals to be attained in rural and native areas when the necessary expansion of health services can be brought about.

Relevant figures of work performed are as follows:—

Attendances at 5 African Clinics

	1	2	3	4	5	Total
ANTE-NATAL—						
Total Attendanees	674	264	375	1,340	1,011	3,664
New Cases	102	100	74	272	223	771
Confined at Home	27	11	14	139	91	282
CHILD WELFARE—						
Total Attendanees, 0–5 years ..	9,999	7,952	2,777	7,260	5,961	33,949
Infants, new, 0–1 year	376	385	146	250	195	1,352
Toddlers, new, 1–5 years	243	230	96	232	219	1,020
HOME VISITS—						
By Health Visitors	2,004	4,242	2,004	932	1,202	10,384
By Assistant Staff	1,807	2,788	2,036	1,650	2,773	11,054

In respect of Asian maternal and child welfare, an Indian lady Medical Officer was appointed in July and was assisted by three Indian Health Visitors. Three Welfare Clinics were maintained and again great stress was laid on the importance of home visiting to overcome the apathy and prejudice encountered among many of the patients. In general, the work proceeded very well against some difficulty, and figures are as follows:—

Attendances at 3 Asian Clinics and Home Visits

	1	2	3	Total
ANTE-NATAL—				
Total Attendanees	2,661	226	673	3,560
New Cases	702	70	302	1,074
Confined at Home	209	83	107	39
CHILD WELFARE—				
Total Attendanees, 0–5 years	4,593	1,360	1,708	7,661
Infants, new, 0–1 year	499	65	274	838
Toddlers, new, 1–5 years	161	75	343	579
HOME VISITS—				
By Health Visitors	2,136	1,459	1,978	5,573
By Health Assistants	1,335	573	809	2,717

At the Council's Maternity Hospital for Africans difficulties with regard to staff were encountered during the year, but the amount of work performed is evidence of the way in which these were surmounted. Pressure upon the hospital was very high and, in spite of the fact that an annexe of ten beds was opened, early discharge of patients was in many cases inevitable. Twenty trainee midwives were accepted during the year, the hospital being the largest training centre for African midwives in the Colony. Towards the end of the year the staff difficulties began to be resolved, while plans for important extensions to the hospital and staff quarters were under consideration.

The following table shows the work performed at the hospital during the year:—

	Resident in Nairobi	Non-Resident	Total
Cases admitted during the year	1,011	874	1,885
Discharged during the year	1,869
Number of beds	37
Patients days	8,669
Baby days	7,108
Motherless Baby days

(2) The Lady Grigg Welfare League

The League still retains under a Committee of Management the Indian Maternity Hospital in Nairobi, which is maintained by fees collected and by subsidies from Government and the Municipal Council. It is also a training centre for Indian midwives.

The work done at this hospital was as follows:—

LADY GRIGG INDIAN MATERNITY HOSPITAL, NAIROBI

Cases	1946	1945	1944	1943
Admissions	588	586	461	439
Births	509	518	397	395
Twins	3	3	4	—
Stillbirths	10	17	15	15
Deaths—Maternal	2	6	2	1
Deaths—Infants	5	5	6	6

AFRICAN MATERNITY HOSPITAL, MOMBASA

Cases	1946	1945	1944	1943	1942
Patients admitted	824	688	554	604	459
Births	617	503	390	452	323
Stillborn infants	36	38	29	28	32
Deaths—Maternal	5	6	6	5	5
Deaths—Infants .. .. .	..	14	14	10	10

(3) Ante-natal, Maternity and Child Welfare Work in Rural and Native Areas

Repetition in annual reports of the value of maternity and allied services among Africans is constant. Nevertheless, their popularity increases and they are a most valuable medium of approach for the extension of medical and health services among African women.

At Government hospitals, including those centres established with the help of Local Native Council funds, the figures for the year for maternity work were as follows:—

At Government Hospitals, Including Those Centres Established with the Help of Local Native Council Funds

Station	Cases
Kabarnet	37
Kapsabet	100
Kiambu	771
Kerugoya	680
Kisumu	918
Kakamega	385
Embu	92
Narok	13
Kericho	143
Wesu	131
Voi	7
Kitui	33
Eldoret	230
Nakuru	537
Kilifi	14
Malindi	22
Machakos	151
Fort Hall	893
Digo	7
Nyeri	752
Kajiado	3
Kitale	102
Kapenguria	8
Meru	136
Lamu	2
Muriranjias	165
Kisii	238
Nyahera Dispensary	136
Others	238

Total ... 6,944

The training of African midwives is undertaken at the Maternity Hospitals now controlled by the Municipal Council and the Municipal Board at Nairobi and Mombasa respectively. In the case of Asians it is undertaken at the Lady Grigg Indian Maternity Hospital in Nairobi. In each case the course extends over two years and candidates who are successful in examinations conducted by Boards appointed by the Director of Medical Services are granted a certificate.

There is little that need be added to the remarks under this heading in the previous annual report, except to say that the continued shortage of midwives is appreciated and that every attempt is being made by all authorities concerned to improve and extend the facilities for training.

A total of eight candidates passed the examination during the year and were certificated, two being Asian and six African.

VII.—HOSPITALS, DISPENSARIES, OUT-DISPENSARIES, VENEREAL CLINICS, THE MENTAL HOSPITAL, MEDICAL WORK CARRIED OUT BY MISSIONARY SOCIETIES, ETC.

The number of patients treated at hospitals and dispensaries during the year was as follows:—

European In-patients	European Out-patients	Asiatic and African In-patients	Asiatic and African Out-patients
3,369	9,567	145,898	796,008

In addition, 1,218,073 first attendances were recorded at out-dispensaries in the native reserves.

The new high total of in-patients and out-patients treated has thrown considerable strain upon hospital accommodation and the physical capacity of a staff which at times was unduly depleted; nevertheless, in spite of overcrowding, which was at times gross, and the lack of modern facilities at most hospitals, the standard of the work performed was at all times high and has kept pace with new technique and development.

IN- AND OUT-PATIENTS TREATED AT GOVERNMENT HOSPITALS, DISPENSARIES AND OUT-DISPENSARIES IN 1946

<i>Hospitals in Townships</i>	<i>In-patients</i>	<i>Out-patients</i>
European Hospital, Nairobi	1,360	4,197
Native Civil Hospital, Nairobi	14,564	—
Mathari Mental Hospital, Nairobi	579	—
Infectious Diseases Hospital, Nairobi	4,472	—
Prison Hospital, Nairobi	1,983	4,318
General Dispensary, Nairobi	3,280	74,011
Loco Dispensary, Nairobi	140	26,172
European Hospital, Mombasa	562	1,020
Native Civil Hospital, Mombasa	8,112	49,736
Infectious Diseases Hospital, Mombasa	1,913	1,156
European Hospital, Kisumu	312	594
Native Civil Hospital, Kisumu	8,279	25,275
Prison Hospital, Kisumu	743	1,879
Native Civil Hospital, Nakuru	9,945	23,204
Native Civil Hospital, Eldoret	3,996	15,596
Railway Dispensary, Eldoret	1,257	2,896
Native Civil Hospital, Kitale	4,152	15,021
Total	65,649	245,075

HOSPITALS IN TURKANA AND NORTHERN FRONTIER PROVINCE AND LAMU

<i>Districts</i>		<i>In-patients</i>		<i>Out-patients</i>		<i>Out-dispensaries</i>
Lodwar	... ..	565	...	4,784	...	—
Lokitaung	... ..	232	...	3,666	...	—
Wajir	... ..	829	...	6,810	...	—
Moyale	... ..	953	...	10,792	...	—
Lamu	... ..	309	...	30,463	...	27,883
Total	...	2,888	...	56,515	...	27,883

HOSPITALS IN THE NATIVE RESERVES

<i>Districts</i>		<i>In-patients</i>		<i>Out-patients</i>		<i>Out-dispensaries</i>
Wesu	... ..	2,191	...	17,943	...	27,780
Voi	... ..	2,380	...	11,822	...	—
Kabarnet	... ..	733	...	7,039	...	15,534
Kitui	... ..	1,882	...	17,724	...	55,392
Kapenguria	... ..	421	...	7,111	...	—
Narok	... ..	2,432	...	6,708	...	15,349
Malindi	... ..	383	...	11,151	...	—
Kakamega	... ..	6,736	...	33,367	...	106,082
Kilifi	... ..	1,543	...	5,411	...	43,954
Kericho	... ..	4,485	...	10,585	...	21,083
Machakos	... ..	3,048	...	29,435	...	79,409
Muriranjias	... ..	2,312	...	15,415	...	—
Kisii	... ..	6,013	...	20,449	...	116,171
Nyeri	... ..	5,373	...	49,798	...	190,991
Fort Hall	... ..	6,905	...	18,157	...	111,006
Meru	... ..	2,385	...	48,129	...	130,125
Kiambu	... ..	5,927	...	21,448	...	17,079
Embu (District)	... ..	2,126	...	17,493	...	89,275
Kajiado	... ..	1,662	...	4,690	...	15,041
Msambweni (Digo)	... ..	1,049	...	4,434	...	101,404
Kapsabet	... ..	2,200	...	11,943	...	36,111
Kerugoya (Embu Dist.)	... ..	4,929	...	26,904	...	—
Tambach	... ..	623	...	5,862	...	—
Rumuruti	... ..	660	...	7,790	...	—
Naivasha	... ..	281	...	8,183	...	—
Shauri Moyo Dispensary	...	—	...	21,668	...	—
Wei Wei Dispensary	...	—	...	—	...	8,761
Thompson's Falls	... ..	570	...	12,119	...	—
Maralal	... ..	1,430	...	4,264	...	—
Thika	... ..	3,131	...	13,050	...	—
Maseno	... ..	—	...	—	...	—
Sandford and Fort Hall Dispensaries	...	—	...	8,714	...	—
Total	...	73,810	...	478,806	...	1,218,073

Surgery

Operations were performed in Government Hospitals during the year, and details of these are given in the table that follows. Surgical work extends and improves year by year and a high standard is maintained, African Medical Officers showing marked capacity in this direction. So far as possible, every encouragement is given to officers to develop surgical practice and the Surgical Specialists assist by guidance in teaching and training. Specialist orthopædic work has been highly developed at the Rehabilitation Centre in Nairobi, and the scope of this Centre has expanded beyond all initial ideas. The degree of surgical work is such that in Nairobi alone four surgeons are fully occupied, and this has been taken into account in designing operative facilities for the new hospital.

The table of operations performed at Government Hospitals shows the following details:—

	1944	1945	1946
Europeans	1,049	1,246	1,012
Asians	857	1,798	1,616
Africans	20,438	22,195	22,178
Total	22,344	25,239	24,806

Anæsthetics

In most out-station hospitals anaesthetics are usually administered by African Hospital Assistants, many of whom have had special training under the Specialist Anaesthetist. The technique is usually with open ether and the general standard of administration is good. As surgical work in out-stations develops, it will be necessary to consider improvement of anaesthetic technique. In the report of the Specialist Anaesthetist for Nairobi it is stated that 765 operations were performed under anaesthesia. Of these 735 were general anaesthetics and 30 local. Cyclonal sodium (Evipan) was the sole drug used in 63 cases. Pentothal sodium was the sole drug used in 78 cases. Spinal anaesthesia was used in four cases.

The remaining 591 cases were given a wide variety of combinations of ether, ethyl chloride, nitrous oxide and tri-chlor-ethylene, and in many cases were induced with either cyclonal or pentothal.

Endo-tracheal anaesthesia of one kind or another was used in 169 cases—trilene formed part of the anaesthetic mixture in 264, and nitrous oxide in 375.

The most recently introduced drug, Curare, was used once in the form of tubo-curarine.

The report of the Specialist Anaesthetist, Nairobi, gives the following details of anaesthetics given during 1946:—

	General	Local	Spinal	Total
Europeans	969	83	8	1,060
Asians	692	244	84	1,020
Africans	8,555	3,061	419	12,035
Grand Total	10,216	3,388	511	14,115

List of Operations

Nature of Operation	Number performed
1. Stomach and Duodenum:—	
(a) Closure of perforations	6
(b) Gastro-enterostomy	9
(c) Gastrectomy	6
(d) Gastro-jejunostomy	1
(e) Gastrostomy	1
(f) Ramstedt's operations	1
2. Intestines:—	
(a) Closure of wounds and perforations	16
(b) Resection and/or anastomosis	13
(c) Reduction of volvulus	25
(d) Reduction of intussusception	11
(e) Division of adhesions or bands	8
(f) For any other cause of obstruction	43
(g) Formation or closure of artificial anus	16
(h) Appendicectomy and/or appendicular drainage	227
(i) Drainage of other peritoneal abscesses	15
(j) Omentopexy	2
(k) Exploratory laparotomy	150
(l) Paracentesis	107
Others	1

Nature of Operation										Number performed
3. Rectum and Anus:—										
(a) Excision of rectum	..	..	..	..	..	..	..	..	..	—
(b) Treatment of prolapse	..	..	..	..	..	..	..	..	..	25
(c) For fissure and fistula	..	..	..	..	..	..	..	..	..	30
(d) For ischio-rectal abscess	..	..	..	..	..	..	..	..	..	22
(e) Ligature of hæmorrhoids	..	..	..	..	..	..	..	..	..	72
(f) Injection of hæmorrhoids	..	..	..	..	..	..	..	..	..	26
(g) Sigmoidoscopy	..	..	..	..	..	..	..	..	..	94
Others	..	..	..	..	..	..	..	..	..	3
4. Hernia:—										
(a) Inguinal	..	..	..	..	..	..	..	..	..	482
(b) Femoral	..	..	..	..	..	..	..	..	..	5
(c) Umbilical	..	..	..	..	..	..	..	..	..	11
(d) Incisional	..	..	..	..	..	..	..	..	..	9
5. Liver, Spleen and Pancreas:—										
(a) Upon liver	..	..	..	..	..	..	..	..	..	25
(b) Cholecystectomy	..	..	..	..	..	..	..	..	..	24
(c) Other operations upon gall bladder and bile ducts	..	..	..	..	..	..	..	..	..	2
(d) Splenectomy	..	..	..	..	..	..	..	..	..	11
(e) For pancreatitis	..	..	..	..	..	..	..	..	..	9
Others	..	..	..	..	..	..	..	..	..	10
6. Urinary System:—										
(a) Nephrotomy	..	..	..	..	..	..	..	..	..	11
(b) Nephrectomy	..	..	..	..	..	..	..	..	..	5
(c) Perinephric exploration	..	..	..	..	..	..	..	..	..	7
(d) Upon ureters (excluding operations for vesico-vaginal fistula)	..	..	..	..	..	..	..	..	..	5
(e) Cystotomy and suprapubic drainage	..	..	..	..	..	..	..	..	..	61
(f) Prostatectomy	..	..	..	..	..	..	..	..	..	22
(g) Urethrotomy	..	..	..	..	..	..	..	..	..	14
(h) For urethral fistula and abscess	..	..	..	..	..	..	..	..	..	11
(i) Cystoscopy and ureteric catheterization	..	..	..	..	..	..	..	..	..	68
(j) Urethral catheterization and passage of sounds	..	..	..	..	..	..	..	..	..	399
Others	..	..	..	..	..	..	..	..	..	9
7. Male Organs of Generation:—										
(a) Circumcision	..	..	..	..	..	..	..	..	..	351
(b) Others for paraphimosis	..	..	..	..	..	..	..	..	..	73
(c) Amputation of penis	..	..	..	..	..	..	..	..	..	3
(d) Hydrocelotomy	..	..	..	..	..	..	..	..	..	247
(e) For varicocele	..	..	..	..	..	..	..	..	..	8
(f) Upon testis and epididymis	..	..	..	..	..	..	..	..	..	22
Others	..	..	..	..	..	..	..	..	..	17
8. Female Organs of Generation:—										
(a) Ovariectomy	..	..	..	..	..	..	..	..	..	66
(b) Salpingotomy	..	..	..	..	..	..	..	..	..	45
(c) Salpingostomy, for sterility	..	..	..	..	..	..	..	..	..	11
(d) Myomectomy	..	..	..	..	..	..	..	..	..	9
(e) Hysterectomy	..	..	..	..	..	..	..	..	..	102
(f) Hysteropexy	..	..	..	..	..	..	..	..	..	25
(g) Caesarian section	..	..	..	..	..	..	..	..	..	104
(h) Uterine suture	..	..	..	..	..	..	..	..	..	—
(i) For extra-uterine gestation	..	..	..	..	..	..	..	..	..	31
(j) Drainage of pelvic abscess	..	..	..	..	..	..	..	..	..	21
(k) Instrumental delivery and destruction of foetus	..	..	..	..	..	..	..	..	..	289
(l) For vesico or recto-vaginal fistula—										
(i) Plastic repair	..	..	..	..	..	..	..	..	..	23
(ii) Uretero-colic anastomosis	..	..	..	..	..	..	..	..	..	62
(m) Colporrhaphy and perineorrhaphy	..	..	..	..	..	..	..	..	..	31
(n) Removal of uterine contents and/or dilation and curettage	..	..	..	..	..	..	..	..	..	635
(o) Induction of labour or abortion	..	..	..	..	..	..	..	..	..	10
(p) Insufflation of Fallopian Tubes	..	..	..	..	..	..	..	..	..	41
(q) Uterine drainage	..	..	..	..	..	..	..	..	..	2
(r) Examination and/or manipulation of uterus or foetus	..	..	..	..	..	..	..	..	..	122
(s) Upon cervix	..	..	..	..	..	..	..	..	..	56
(t) Others upon vagina and vulva	..	..	..	..	..	..	..	..	..	29
Others	..	..	..	..	..	..	..	..	..	46
9. Eye:—										
(a) For entropion	..	..	..	..	..	..	..	..	..	33
(b) For cataract	..	..	..	..	..	..	..	..	..	51
(c) For glaucoma	..	..	..	..	..	..	..	..	..	8
(d) Irridectomy	..	..	..	..	..	..	..	..	..	17
(e) Enucleation and evisceration	..	..	..	..	..	..	..	..	..	50
Others	..	..	..	..	..	..	..	..	..	60

10. Ear, Nose and Throat:—

(a) Myringotomy	2
(b) Mastoidotomy	19
(c) Removal of foreign bodies	75
(d) Reduction of nasal fracture	4
(e) Resection of septum	1
(f) Turbinectomy and/or drainage of sinuses	8
(g) Removal of tumours	22
(h) Tonsillotomy, by guillotine	10
(i) Tonsillectomy, by dissection (both including removal of adenoids)	191
(j) For quinzy	10
(k) Uvulotomy	34
(l) Laryngoscopy, bronchoscopy and œsophagoscopy	7
Others	1

11. Mouth and Neck:—

(a) Extraction of teeth	5,247
(b) Upon jaws (including treatment of fractures)	13
(c) Upon tongue and lips (including removal of tumours, but excluding plastic operations)	17
(d) Excision or treatment of glands in neck	131
(e) Tracheotomy	13
(f) Thyroidectomy (including ligature of thyroid vessels)	32
(g) For thyro-glossal cysts	3
Others	1

12. Chest:—

(a) Thoracotomy and pleural drainage	23
(b) Lobectomy	—
(c) Upon cardia	1
(d) Phrenic avulsion	11
(e) Artificial pneumothorax	1,013
(f) Paracentesis	148
Others	2

13. Mammary Glands:—

(a) Mastectomy	14
(b) Excision of tumour	16
(c) Incision of abscess	83

14. Cranium:—

(a) Decompression and treatment of fracture and hæmorrhage	39
(b) For intracranial tumour	5
(c) Drainage of intercranial abscess	3
Others	1

15. Spinal Column:—

(a) Laminectomy	1
(b) Bone graft	24
(c) Manipulation and/or external fixation (for tuberculosis, fracture and other conditions, including application of plaster jacket)	143
(d) Lumbar and cisternal puncture	551
(e) Spinal injection	77

16. Bones:—

(a) For fractures:	
(i) Open operations (including bone graft, application of plates and other mechanical aids)	184
(ii) Manual and instrumental reduction and/or application of splints and plaster	2,339
(b) For osteomyelitis, osteitis and periostitis:	
(i) Acute	45
(ii) Chronic (including sequestrectomy and/or application of plaster)	297
(c) Removal of tumours	15

17. Joints:—

(a) Arthrotomy:	
(i) For sepsis	75
(ii) For removal of loose or foreign bodies	10
(b) Excision of joint	28
(c) Reduction of dislocation	112
(d) Manipulation for other purposes	71
(e) External fixation (including application of plaster)	351
(f) Aspiration	233
Others	36

<i>Nature of Operation</i>	<i>Number performed</i>
18. Amputations:—	
(a) Of fingers	203
(b) Of hand and forearm	19
(c) Of arm	13
(d) Of toes	70
(e) Of foot and leg	93
(f) Of thigh	37
Others	1
19. Arteries, Veins and Nerves:—	
(a) For aneurysm	1
(b) Ligature of vessels	20
(c) For angioma	5
(d) Injection of varicose veins	5
(e) Nerve suture and neurolysis	10
(f) Others upon nerves (including stretching and injection)	7
20. Orthopædic and Plastic Operations:—	
(a) Osteotomy (for deformities)	28
(b) Other treatment of deformities and contractures (including manipulation and application of splints and plaster)	101
(c) For hare lip and cleft palate	5
(d) Upon ears, nose and lips	26
(e) For elephantiasis	17
(f) Skin graft	206
Others	3
21. Conditions Unclassified Regionally:—	
(a) For ulcers (excluding skin graft)	1,670
(b) For other septic conditions (including incision of abscesses and whitlows)	3,051
(c) Suture and treatment of wounds (including tendon suture)	1,558
(d) Excision of superficial tumours (including cysts)	529
(e) Extraction of foreign bodies	345
(f) Removal of glands	46
(g) For bursitis and ganglion	102
(h) Treatment of burns	150
(i) Removal of parasites	5
Others	96
23. Surgical Procedures Otherwise Unclassified	250

Diseases of the Eye

The return for 1946 furnished by the Ophthalmic Specialist, Nairobi, shows an increase in the number of cases of all races treated.

The percentage attendance of Africans on account of trachoma shows a marked decrease on that for 1945.

Eye Clinic, General Dispensary, Nairobi

The following are details of work done and cases seen at the Eye Clinic held at the General Dispensary, Nairobi, during 1946:—

	<i>Europeans</i>	<i>Asians</i>	<i>Africans</i>
Conjunctivitis	81	237	3,305
Trachoma	6	57	808
Tumours	2	—	8
Others	355	735	2,170
Total number of new cases	598	1,242	6,529
Total number of re-attendances	1,031	2,756	17,742
Number of males	367	1,038	4,885
Number of females	231	94	1,654
“Others” includes diseases of:—			
Orbit—			
Neuralgia	—	2	19
Cellulitis	—	—	—
Tumour	—	—	3
Injury	—	—	—
Extrinsic Musculature—Lids and Surrounding Structures—			
Blepharitis	—	10	28
Hordeolum	8	13	97
Chalazion	10	9	160
Trichiasis, distichasis	—	1	2
Entropion	1	—	39
Injuries	3	5	55
Others	4	4	21
Lacrimal Apparatus—			
Lacrimal Gland	1	—	—
Lacrimal Sac	2	—	6

	<i>Europeans</i>					<i>Asians</i>		<i>Africans</i>		
Conjunctiva (other than conjunctivitis and trachoma)—										
Xerosis	—	..	—	..	—	
Pinguecula	—	..	—	..	—	
Pterigium	4	..	6	..	33	
Hæmorrhage	3	..	1	..	34	
Tumour	—	..	—	..	5	
Injuries	2	..	8	..	8	
Foreign body	3	..	10	..	72	
Others	4	..	6	..	45	
Cornea—										
Foreign body	16	..	85	..	236	
Opacities	3	..	9	..	74	
Ulcer	6	..	8	..	165	
Interstitial keratitis	—	..	—	..	4	
Other forms of keratitis	2	..	4	..	111	
Staphyloma	—	..	—	..	17	
Injuries	7	..	12	..	102	
Others	—	..	—	..	8	
Lens and Vitreous—										
Cataract	1	..	2	..	70	
Injuries	—	..	—	..	2	
Others	1	..	—	..	1	
Uveal Tract—										
Irido-cyclitis	2	..	—	..	43	
Others	—	..	—	..	4	
Retina—										
Detachment	1	..	—	..	—	
Retinitis—Night Blindness	—	..	—	..	112	
Others	1	..	1	..	1	
Optic Nerve and Central Connections—										
Papilloedema	—	..	—	..	—	
Optic neuritis	—	..	—	..	7	
Atrophy	—	..	—	..	9	
Others	—	..	—	..	—	
Glaucoma	—	..	2	..	11	
Panophthalmitis	—	..	—	..	6	
Contusion of globe	1	..	2	..	94	
Vision tests	52	..	702	..	364	
Errors of refractions	489	..	238	..	410	
Examination and report	7	..	—	..	3	
Miscellaneous	2	..	1	..	59	

Medical Training of Africans

Training of African medical auxiliaries continued at the Medical Training School in Nairobi, which is associated with the Native Hospital. Training is undertaken by the Medical Officer in Charge and Specialist Officers at the hospital also assist with teaching.

The School exists for the purpose of giving training to educated unmarried Kenya Africans. The minimum standard of scholastic attainment on entry has been, in the past, the Primary Examination. Preference has, however, been given, except in the case of Laboratory Assistants, to those who have had a secondary education. In the coming year it appears that nearly all the vacancies for compounders and hospital assistants will be filled by boys who have passed the Junior Secondary Examination. Boys are trained for the following posts:—

Hospital Assistants, Compounders, Masseurs, Laboratory Assistants, Clerks and Health Inspectors (beginning in 1947).

All these learners are housed and fed at the School and the officers of the School maintain discipline amongst all sections. Nevertheless, the instruction given to each class has been in the hands of the sectional officers concerned. An element of rivalry and lack of uniformity in recruitment became apparent late in the year and it is suggested that plans for recruitment for 1948 should be better co-ordinated.

Hospital Assistants.

After three years (or four years for those who have not had a secondary education) successful learners pass out from the School as Grade II Hospital Assistants. During the year sixteen candidates satisfied the examiners and three others, one ex-military, were permitted to proceed as Grade II Hospital Assistants without increments.

The training of Hospital Assistants consists throughout of practical nursing in the wards with gradually increasing responsibilities. Theoretical instruction in nursing, which was formerly limited to the first and second years was given to all learners in 1946. This change was made both for its intrinsic value and to impress on students that the greatest importance is attached to nursing. During the first and second years (boys with secondary education on admission have been termed "second year" students) instruction is also given in anatomy and physiology, hygiene and first aid and during the third and fourth years in medicine, surgery, theoretical obstetrics, pharmacology, ophthalmology and preventive medicine. Students are encouraged to take accurate histories and to learn to recognize the commoner diseases and to learn when a patient is in need of admission to hospital or of treatment by a medical officer. Stress is laid on observation and a stethoscope is not permitted. The value of laboratory tests is taught, but in relation to the understanding of disease and with reference to their probable accessibility in Native Area Hospitals. No training is given in microscopy, but the testing of urine is taught and *occasional* post-mortem demonstrations have been given. Selected students only are trained in the giving of anaesthetics and others are chosen for extra experience in special departments.

It is difficult to assess the future value of hospital assistants on qualifications. On the whole, the batch qualifying in 1946 were probably of average worth. The year was notable for producing the first female hospital assistant and she gained first place in the final examination. Another girl left to get married to an African Assistant Medical Officer, but may return at a later date to complete the course.

Reports from the Provincial and District Medical Officers indicate that the majority of qualified hospital assistants are doing useful work, either in hospitals under supervision (where the duties are either the running of wards and the supervision of dressers and/or the conducting of out-patients and assisting in the operating theatre), or in charge of large dispensaries, usually containing a limited number of beds. Thus the demand for more hospital assistants exceeds the supply. Nevertheless, the just criticism is often heard that hospital assistants are poor nurses and only interested in aping the doctor. There is also a tendency for hospital assistants posted away from their homes to become dissatisfied, partly owing to the cost of living, and under these circumstances their work deteriorates and some elect to resign.

Compounders.

The course is three years in length and the qualifications on entry and pay on qualification are the same as for hospital assistants. No compounders qualified in 1946.

Masseurs.

The course is three years and the pay on qualification is the same as for hospital assistants. There were only two learners, both third-year, and they both qualified.

Teaching was carried out under the direction of the Medical Officer in Charge, Rehabilitation Centre.

Laboratory Assistants.

There were nine first-year, twelve second-year and two third-year learners. Teaching was carried out entirely at the Medical Research Laboratory. Two qualified as Laboratory Assistants, Grade II, on the same rates of pay as hospital assistants.

Health Inspectors.

Preparations were made for this course to begin in 1947. Anatomy and physiology will be taught, together with the first-year learner hospital assistants. The other instruction will be given by the European Senior Health Inspector.

Tribes represented by learners who completed the year in the Training School were as follows:—

Kikuyu	...	...	...	...	28	Baluhia	...	...	...	...	8
Jaluo	...	...	...	...	21	Embu	...	...	...	...	2
Maragoli	...	...	...	...	8	Mpokomo	...	...	...	...	1
Wanyore	...	...	...	...	1	Nandi	...	...	...	...	2
WaGirama	...	...	...	...	2	Sudan	...	...	...	...	1
Meru	...	...	...	...	3	Masai	...	...	...	...	2
Rabai	...	...	...	...	2	Kakamega	...	...	...	...	2
Samia	...	...	...	...	4	Mrama	...	...	...	...	1
Wakamba	...	...	...	...	3	Teita	...	...	...	...	5
Kisii	...	...	...	...	2	Kitosh	...	...	...	...	1

This gives a total of 99 learners, made up as follows:—

Hospital Assistant Learners 58, Compounders 13, Masseurs 2, Clerks 3, and Laboratory Learners 23.

First year (Primary Students)	...	...	...	...	...	31
First year (Secondary Students)	...	...	...	...	...	16
Second year (Primary Students)	...	...	...	...	...	16
Second year (Secondary Students)	...	...	...	...	...	6
Third year (Primary Students)	...	...	...	...	...	12
Third year (Secondary Students)	...	...	...	...	...	7
Fourth year (Primary Students)	...	...	...	...	...	10
Fourth year (Secondary Students)	...	...	...	...	...	1

The total number of qualified staff for the whole Colony on 1st January, 1947, is as follows:—

Hospital Assistants, Grade I	...	...	...	...	...	46
Hospital Assistants, Grade II	...	...	...	...	...	114
Compounders, Grade I	...	...	...	...	...	12
Compounders, Grade II	...	...	...	...	...	10
Masseurs, Grade II	...	...	...	...	...	9

During the year one hospital assistant left at his own request. One masseur, Grade II, was dismissed from the service. Two compounders, Grade II, died.

Discipline in the School on the whole was good, after measures were taken to require the dismissal of fifteen learners for disobedience and insubordination.

The accommodation and facilities at the School are now completely inadequate and the building of a new school under the Development Scheme should receive first priority.

This matter has already been referred to on more than one occasion earlier in this report.

Venereal Diseases Clinics

Treatment of venereal diseases is afforded for men and women at Government and Municipal Clinics in Nairobi and Mombasa, while special clinics for women are maintained by Government at Nanyuki and Gilgil. Treatment is also carried out both for in-patients and out-patients at all Government hospitals throughout the Colony. Figures of cases treated for the last four years are as follows:—

	1943	1944	1945	1946
Syphilis	13,382	13,907	17,105	16,763
Gonorrhœa	7,807	8,032	11,899	15,178

Treatment was limited only by the corresponding limitations in the physical capacity of the staff available and the facilities existing. Penicillin was used extensively in the treatment of gonorrhœa, but the employment of the intensive technique for the treatment of syphilis has yet to be adopted, though this is being investigated. With the provision of the extra staff and facilities proposed, a wider extension of treatment should be possible.

There is, however, as stressed in the previous Annual Report, another side to the question, which is of extreme importance among a population largely uninfluenced by an awareness of the social consequences of venereal infection. It is the necessity, as mentioned before, to bring to bear all possible influences, especially as regards young adults, to encourage clean and healthy living, and to devise methods of propaganda suitable for direction towards this population.

This is no easy task, but the extraordinary success attained by women workers, particularly those with a bias to social welfare, indicates one profitable line of approach which can be exploited. The whole question of control of venereal disease is a complete one which is beset with difficulty. It by no means devolves purely and entirely upon the medical side, but involves the application of every influence in the whole social structure if success ultimately is to be achieved.

Medical Work Carried Out by Missionary Societies

The number of hospital beds maintained by the Missionary Societies receiving Medical Grants from Government, the number of patients treated in these Institutes and the amount of the grants given are shown in the following table:—

Mission	Place	No. of Beds	In-patients	Out-patients	Out-Dispensary patients	Confinements	Amount of Grants
C.S.M. ..	Kikuyu	87	2,009	15,515	—	511	£ 900
„ ..	Chogoria	68	3,374	18,695	—	169	600
„ ..	Tumutumu	115	2,444	21,634	66,583	1,506	1,440
C.M.S. ..	Kaloleni	75	1,389	23,000	84,286	54	1,272
„ ..	Maseno	82	1,796	16,338	8,298	248	588
S.D.A. ..	Kendu	75	—	—	—	—	540
M.M.S. ..	Meru	56	—	—	—	—	360

C.S.M.—Church of Scotland Mission.
C.M.S.—Church Missionary Society.
S.D.A.—Seventh Day Adventists.
M.M.S.—Methodist Missionary Society.

Prisons and Asylums

The vital statistics for the prisons of the Colony for the last three years are as follows:—

YEAR	In-patients	Daily Average % In-patients	New Cases Out-patients	Daily Average % New Cases Out-patients	Deaths	Daily Average in Prison
1944	3,081	63·8	48·75	13·32	47	1,002·88
1945	2,307	77·05	55·85	15·31	32	1,776·99
1946	2,726	71·77	47·86	13·11	35	1,090·10

The 35 deaths were from natural causes and were due to the following diseases:—

Diseases	Nairobi Prison	All other Prisons	Total
Typhoid Fever	1	—	1
Paratyphoid B	1	—	1
Dysentery Bacillary	1	—	1
Dysentery Undefined	2	—	2
Tuberculosis Pulmonary	7	—	7
Tuberculosis of the Meninges	1	—	1
Syphilis Secondary	1	—	1
Other forms of Mental Alienation	8	—	8
Pericarditis	1	—	1
Pneumonia—Lobar	10	—	10
Pleurisy Empyema	1	—	1
Other Affects of the Lungs	1	—	1
Diarrhœa & Enteritis (over 2 years)	1	—	1
Total	35	—	35

The Mathari Mental Hospital

Accommodation.

The accommodation for all races and both sexes has been filled to capacity throughout the year, with the exception of the male European block where the situation was relieved in April by the repatriation of four Italian evacuees.

There has, moreover, been a waiting list of African men and women throughout the year, which has often been of considerable dimensions and has created a serious problem for the Prison Department. There is also a waiting list of Asian males.

In view of the proposed transfer of Mathari to a new site, no new accommodation has been built during the year. It must be emphasized, however, that if occupation of the new site cannot take place till 1948 (as seems likely), further accommodation at Mathari is imperative.

Military.

During the year only two European and two African military mental cases were admitted for treatment.

Italian Evacuees.

All the Italian evacuees, to the number of four, were repatriated in April.

Patients Treated.

Five hundred and seventy-nine patients of all races received treatment, a new high record for the hospital.

Deaths.

The percentage of deaths to total treated was 7.42 per cent. Of the 43 deaths, the cause of death was certified as:—

Debility	...	...	...	...	...	...	11
Tuberculosis	...	...	...	...	...	...	6
Septic conditions	...	...	...	...	...	...	6
Pneumonia	...	...	...	...	...	...	5
Syphilis	...	...	...	...	...	...	3
Senility	...	...	...	...	...	...	3
Cirrhosis of Liver	...	...	...	...	...	...	2
Other causes	...	...	...	...	...	...	7

General.

Electro-convulsive therapy was given to a large number of patients of all races with varying success. In the case of Africans, however, an alarming proportion developed lung abscesses following this treatment, for reasons that are not clear. This treatment was, therefore, temporarily discontinued for them.

Much progress has been made with the new Mental Treatment Act, and it is hoped it will be ready for presentation to Legislative Council in the New Year.

Partly arising out of difficulties connected with the proximity of Mathari to Eastleigh Aerodrome, it was decided to move the mental hospital to a new site. A new site was chosen at Kamiti and it is hoped that the building of the new hospital will proceed without delay in the New Year.

Patients' Occupational Recreation and Welfare

Seventy-three per cent of patients of both sexes were employed daily on general maintenance of the Hospital, i.e. kitchen, laundry, etc., 11 per cent; ward maintenance, 21 per cent; gardens, 41 per cent; the remaining 27 per cent being unemployable.

Wednesdays, Saturdays and Sundays are devoted to organized recreation among Asian and African patients.

European female patients are occupied with needlework, knitting and various games, such as table tennis and card games.

European male patients have undertaken simple clerical work and assisted in the building of *boma* fences. Male patients have also been taken out on nearby links for golf and to organized tennis parties by the male nursing staff.

A plentiful supply of periodicals (illustrated and daily and weekly papers) are enjoyed by all races.

GENERAL STATISTICS

A.—Types of Mental Disorders from which Patients Suffered and were Treated.

Manic Depressive	...	...	...	...	...	21
Involution Melancholia	...	...	...	...	...	4
Schizophrenia	...	...	...	...	...	176
Paranoia	...	...	...	...	...	16
Neurosyphilis	...	...	...	...	...	7
Senile Dementia	...	...	...	...	...	25
Other organic reactions	...	...	...	...	...	30
Epilepsy	...	...	...	...	...	21
Terminal Dementia	...	...	...	...	...	16
Neuroses	...	...	...	...	...	2
Mental Defect	...	...	...	...	...	56
Moral Defect	...	...	...	...	...	16
Unclassified	...	...	...	...	...	189

Total ... 579

B.—Total Number of Patients Treated.

Males	...	...	...	...	...	...	...	409
Females	...	...	...	...	...	...	...	170
								—
Total								579

C.—Admissions were from the following places:—

Place	Males				Females				Total
Nairobi	60	...	...	...	22	82
Fort Hall	17	...	...	...	9	26
Kiambu	3	...	...	...	2	5
Kericho	5	...	...	...	2	7
Nakuru	2	...	...	...	1	3
Kisumu	7	...	...	...	—	7
Kitale	1	...	...	...	—	1
Embu	6	...	...	...	1	7
Nyeri	11	...	...	...	4	15
Kabarnet	1	...	...	...	1	2
Mombasa	3	...	...	...	—	3
Isiolo	1	...	...	...	—	1
Machakos	4	...	...	...	4	8
Kapsabet	1	...	...	...	—	1
Kakamega	2	...	...	...	—	2
Kilifi	1	...	...	...	—	1
Eldoret	1	...	...	...	1	2
Malindi	1	...	...	...	—	1
Meru	1	...	...	...	—	1
Rumuruti	1	...	...	...	—	1
Total				129	...	...	...	47	176

D.—Percentage of Death to Total Treated.

YEAR				No. Treated	Deaths	Percentage
1942	..	..	..	455	41	9.01
1943	..	..	..	489	77	15.74
1944	..	..	..	522	48	8.43
1945	..	..	..	560	35	6.25
1946	..	..	..	579	43	7.42

E.—Admissions, Discharges and Deaths for Past Three Years.

				ADMISSIONS			DEATHS			DISCHARGES		
				1944	1945	1946	1944	1945	1946	1944	1945	1946
Males	..	..	..	197	187	163	42	26	28	121	127	127
Females	..	..	..	70	70	65	6	9	15	50	47	52
TOTAL	..			267	257	228	48	35	43	171	174	179

F.—Total Number of Patient-days.

				1944	1945	1946
European Male and Female	...	...	...	4,315	5,336	5,278
Asian Male and Female	...	...	...	6,807	9,633	10,360
African Male	...	...	...	64,097	75,714	82,339
African Female	...	...	...	27,936	29,743	31,203
Total				103,155	120,426	129,180

G.—Average Daily Numbers.

	1944		1945		1946
	282	...	330	...	381

Remaining End of Last Three Years—

			1944		1945		1946
Males	...	...	212	...	246	...	251
Females	...	...	91	...	105	...	103

H.—European Section.

Total number treated was:—

Males	...	...	...	...	...	...	19
Females	...	...	...	...	...	...	20
							—
					Total	...	39
							—

					Males		Females
Remaining from 1945	...	...	...	...	8	...	6
Admitted during 1946	...	...	...	...	11	...	14
Discharged during 1946	...	...	...	...	14	...	10
Died during 1946	...	...	...	...	2	...	1
Remaining at the end of 1946	...	...	...	...	3	...	9

Total Number of Days Resident—

					Males		Females
By those discharged	...	...	...	...	3,643	...	495
By those died	...	...	...	...	618	...	60
By those remaining	...	...	...	...	1,474	...	9,374
					—		—
			Total	...	5,735	...	9,929
					—		—

I.—Asian Section.

Total number treated was:—

Males	...	...	...	...	...	...	37
Females	...	...	...	...	...	...	14
							—
					Total	...	51
							—

					Males		Females
Remaining from 1945	...	...	...	...	17	...	10
Admitted during 1946	...	...	...	...	20	...	4
Discharged during 1946	...	...	...	...	15	...	5
Died during 1946	...	...	...	...	1	...	1
Remaining at the end of 1946	...	...	...	...	21	...	8

Total Number of Days Resident—

By those discharged	...	...	...	...	3,700	...	646
By those died	...	...	...	...	11	...	627
By those remaining	...	...	...	...	26,150	...	14,214
					—		—
					29,861		15,487
					—		—

J.—African Section.

Total number treated was:—

Males	...	...	...	...	...	...	353
Females	...	...	...	...	...	...	136
							—
					Total	...	489
							—

					Males		Females
Remaining from 1945	...	...	...	...	221	...	89
Admitted during 1946	...	...	...	...	132	...	47
Discharged during 1946	...	...	...	...	98	...	37
Died during 1946	...	...	...	...	25	...	13
Remaining at the end of 1946	...	...	...	...	227	...	86

Total Number of Days Resident—

				<i>Males</i>		<i>Females</i>
By those discharged	...	...	...	43,516	...	10,154
By those died	...	...	...	9,354	...	14,717
By those remaining	...	...	...	323,976	...	118,997
Total				376,846	...	143,868

TABLE II.—FINANCIAL

The sanctioned Medical budget for the year 1946 was a total of £444,647, as compared with £385,898 for the preceding twelve months.

The headings under which the Vote was arranged were as follows:—

MEDICAL DEPARTMENT

					<i>Estimates</i>	<i>Actual</i>
					<i>£</i>	<i>Expenditure</i>
Administrative Division—Personal Emoluments	..	..	..	..	14,742	16,527
Medical Division—Personal Emoluments	..	..	..	..	49,843	49,832
Sanitation Division—Personal Emoluments	..	..	..	..	7,749	6,104
Laboratory Division—Personal Emoluments	..	..	..	..	23,147	18,060
Other Charges	..	..	..	..	55,049	51,794
					£150,530	£142,317
Native Services—Personal Emoluments	..	..	..	..	139,296	131,109
Native Services—Other Charges	..	..	..	..	135,461	135,575
					£274,757	£266,634
Extraordinary Expenditure	..	..	..	..	£19,360	£26,991

The total amount of revenue collected was as follows:—

Hospital Fees	..	..	..	..	..	17,224	
Infectious Diseases Hospital	..	..	..	..	..	1,547	
Fees from Medical Research Laboratory	..	..	..	..	..	10,881	
Registration Fees	..	..	..	..	..	142	
Sales of Medicines, Stores, etc.; Sales of Quinine	..	..	..	..	..	4,457	
Hire of Government Motor Vehicles (Ambulances)	..	..	..	..	..	114	
Medical Stores and Equipment issued to Local Native Councils	..	..	..	..	..	6,452	
						£40,817	
Reimbursement from Uganda Government on account of Zanzibar Sanitary Station	..	..	..	..	..	244	
Reimbursement from K.U.R. & H. on account of medical services	..	..	..	..	..	9,590	
Reimbursement from Municipalities on account of Public Health Staff	..	..	..	..	..	1,011	
Reimbursement on account of messing expenses, European Hospital, Nairobi	..	..	..	..	..	919	
						£11,764	
							11,764
							£52,581

Last year the total revenue collected amounted to £57,675.

COLONY AND PROTECTORATE OF KENYA

TABLE III.—RETURN OF DISEASES (IN-PATIENTS)

For the Year 1946

DISEASES	EUROPEAN OFFICIALS				EUROPEAN GENERAL POPULATION				ASIATIC GENERAL POPULATION (including OFFICIALS)				NATIVE GENERAL POPULATION (including OFFICIALS)			
	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year 1946	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year 1946	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Total Cases Treated	Cases remaining in Hospital from previous year 1945	Total Admission
I.—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES																
1. Enteric Group—																
(a) Typhoid Fever ..	—	4	1	4	—	—	3	—	3	—	1	16	2	17	87	542
(b) Paratyphoid A ..	—	—	—	—	—	—	1	—	1	—	—	1	—	1	—	15
(c) Paratyphoid B ..	—	1	—	1	—	—	—	—	—	1	—	5	1	5	—	6
(d) Type not defined ..	—	—	—	—	—	—	—	—	—	—	—	1	—	1	—	8
2. Typhus ..	—	7	—	7	—	—	7	—	—	—	—	—	—	—	—	19
3. Relapsing Fever ..	—	—	—	—	—	—	—	—	—	—	—	18	3	18	30	566
4. Undulant Fever ..	—	—	—	—	—	—	—	—	—	—	—	1	1	1	5	72
5. Malaria—																
(a) Tertian ..	—	16	—	16	—	—	25	1	25	—	—	40	2	40	2	166
(b) Quartan ..	—	1	—	1	—	—	—	—	—	—	—	5	—	5	3	232
(c) Aestivo-autumnal ..	1	86	—	87	—	1	159	1	160	1	1	431	7	432	102	10,263
(d) Clinical ..	—	73	—	73	1	—	134	—	134	21	18	1,653	1	1,671	89	9,296
(e) Cachexia ..	—	1	—	1	—	—	1	—	1	—	—	1	—	1	1	89
(f) Blackwater ..	—	—	—	—	—	—	2	1	2	—	—	8	2	8	8	17
(g) Cerebral ..	—	—	—	—	—	—	1	1	1	—	—	1	—	1	1	126
6. Smallpox ..	—	—	—	—	—	—	—	—	—	—	—	25	4	25	12	422
Alastrim ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8
7. Measles ..	—	2	—	2	—	—	14	—	14	1	—	24	—	24	14	790
8. Scarlet Fever ..	—	6	—	6	—	—	6	—	6	—	—	1	—	1	—	1
9. Whooping Cough ..	—	—	—	—	—	—	4	—	4	—	—	16	—	16	35	988
10. Diphtheria ..	—	—	—	—	—	—	4	—	4	—	1	18	1	19	—	19
11. Influenza ..	1	33	—	34	—	—	25	—	25	13	12	1,638	—	1,650	17	1,611
12. Miliary Fever ..	—	1	—	1	—	—	—	—	—	—	—	21	—	21	3	598
13. Mumps ..	—	10	—	10	—	—	119	—	119	—	—	—	—	—	—	—
14. Cholera ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40
15. Epidemic diarrhoea ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
16. Dysentery—																
(a) Amoebic ..	—	18	—	18	—	—	47	—	47	2	1	48	—	49	19	1,390
(b) Bacillary ..	—	9	—	9	—	—	10	1	10	—	—	86	—	86	25	1,084
(c) Undefined or due to other causes ..	—	—	—	—	—	—	3	—	3	—	—	41	—	41	16	590

RETURN OF DISEASES—IN-PATIENTS—(Contd.)

DISEASES	EUROPEAN OFFICIALS					EUROPEAN GENERAL POPULATION					ASIATIC GENERAL POPULATION (including OFFICIALS)					NATIVE GENERAL POPULATION (including OFFICIALS)				
	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year 1946	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year 1946	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year 1946	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year 1946
I.—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES—(Contd.)																				
39. Soft Chancre	—	—	—	—	—	—	2	—	2	—	—	3	—	3	—	3	396	—	399	102
40. A.—Gonorrhoea and its complications	—	—	—	—	—	6	36	—	42	—	—	40	—	40	—	179	6,919	6	7,098	212
B.—Gonorrhoeal Ophthalmia	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	285	5	285	5
C.—Gonorrhoeal Arthritis	—	—	—	—	—	—	—	—	—	—	—	2	—	2	—	2	179	2	181	12
D.—Granuloma Venereum	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11	—	11	1
41. Septicæmia	—	3	—	3	—	—	2	—	2	—	—	5	—	5	—	1	129	74	130	6
42. Other Infectious Diseases	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	49	3	50	1
II.—GENERAL DISEASES NOT MENTIONED ABOVE																				
43. Cancer or other Malignant Tumours of the Buccal Cavity	—	—	—	—	—	—	—	—	—	—	—	1	—	1	—	—	9	1	9	—
44. Cancer or other Malignant Tumours of the Stomach or Liver	—	—	—	—	—	1	8	6	9	—	1	6	—	7	—	1	76	38	77	1
45. Cancer or other Malignant Tumours of the Peritoneum Intestines, Rectum	—	—	—	—	—	—	3	—	3	—	—	1	—	1	—	1	15	9	16	—
46. Cancer or other Malignant Tumours of the Female Genital Organs	—	—	—	—	—	—	3	1	3	—	—	4	—	4	—	—	49	9	49	—
47. Cancer or other Malignant Tumours of the Breast	—	—	—	—	—	—	5	—	5	—	—	—	—	—	—	2	16	1	18	1
48. Cancer or other Malignant Tumours of the Skin	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	1	39	7	40	4
49. Cancer or other Malignant Tumours of Organs not Specified	—	—	—	—	—	—	2	1	2	—	—	2	—	2	—	3	79	22	82	3
50. Tumours, Non-Malignant	—	8	—	8	—	—	20	—	20	1	—	10	—	10	—	7	306	1	313	8
51. Acute Rheumatism	—	3	—	3	—	—	1	—	1	—	3	176	1	179	5	7	459	4	466	9
52. Chronic Rheumatism	—	2	—	2	—	—	3	—	3	—	1	94	—	95	—	16	663	1	679	20
53. Scurvy (including Barlow's Disease)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	23	—	23	1
(a) Kwashiorkor	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	191	42	191	—
(b) Pellagra	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	13	120	26	133	11

RETURN OF DISEASES—IN-PATIENTS—(Contd.)

DISEASES	EUROPEAN OFFICIALS				EUROPEAN GENERAL POPULATION				ASIATIC GENERAL POPULATION (including OFFICIALS)				NATIVE GENERAL POPULATION (including OFFICIALS)			
	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year 1946	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year 1946	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year 1946	
III.—AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES—(Contd.)																
76. General Paralysis of the Insane	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
77. Other Forms of Mental Alienation	—	1	—	1	—	—	7	—	7	—	—	3	—	3	—	
78. Epilepsy	—	—	—	—	—	—	5	—	5	—	—	5	—	5	—	
79. Eclampsia	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	
(non-puerperal) 5 years or over ..	—	—	—	—	—	—	1	—	1	—	—	1	—	1	—	
80. Infantile Convulsions	—	1	—	1	—	—	1	—	1	—	—	1	—	1	—	
81. Chorea	—	1	—	1	—	—	8	—	8	—	—	6	—	6	—	
82. A.—Hysteria	—	2	—	2	—	—	4	—	4	—	—	32	—	32	—	
B.—Neuritis	—	7	—	7	—	—	8	—	8	—	—	57	—	57	—	
C.—Neurasthenia	—	—	—	—	—	—	—	—	—	—	—	2	—	2	—	
83. Cerebral Softening	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
84. Other Affections of the Nervous System, such as Paralysis Agitans	—	2	—	2	—	—	3	—	3	—	—	121	—	121	—	
85. Affections of the Organs of Vision—																
(a) Conjunctivitis	—	4	—	4	—	—	2	—	2	—	1	132	—	133	—	
(b) Trachoma	—	—	—	—	—	—	—	—	—	—	—	4	—	4	—	
(c) Tumours of the Eye	—	—	—	—	—	—	—	—	—	—	—	2	—	2	—	
(d) Other Affections of the Eye	—	2	—	2	—	—	12	—	12	—	2	55	—	57	—	
86. Affections of the Ear or Mastoid Sinus	—	10	—	10	—	—	17	—	17	—	—	102	—	102	—	
IV.—AFFECTIONS OF THE CIRCULATORY SYSTEM																
87. Pericarditis	—	—	—	—	—	—	1	1	1	—	—	1	—	1	—	
88. Acute Endocarditis or Myocarditis	—	1	—	1	—	—	10	4	10	—	—	2	1	2	—	
89. Angina Pectoris	—	4	—	4	1	—	1	1	1	—	1	6	—	7	—	
90. Other Diseases of the Heart—																
(a) Valvular—																
Mitral	—	2	—	2	1	—	1	—	1	—	—	3	2	3	—	
Aortic	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	
Tricuspid	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

RETURN OF DISEASES—IN-PATIENTS—(Contd.)

DISEASES	EUROPEAN OFFICIALS					EUROPEAN GENERAL POPULATION					ASIATIC GENERAL POPULATION (including OFFICIALS)					NATIVE GENERAL POPULATION (including OFFICIALS)				
	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Treated Cases	Remaining in Hospital at end of year 1946	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Treated Cases	Remaining in Hospital at end of year 1946	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Treated Cases	Remaining in Hospital at end of year 1946	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Treated Cases	Remaining in Hospital at end of year 1946
VI.—DISEASES OF THE DIGESTIVE SYSTEM																				
108. A.—Diseases of Teeth or Gums—																				
Caries	—	6	—	6	—	—	7	—	7	—	—	52	—	52	—	2	99	—	101	—
Pyorrhœa	—	1	—	1	—	—	—	—	—	—	—	12	—	12	1	2	60	—	62	3
B.—Other Affections of the Mouth																				
Stomatitis	—	1	—	1	—	—	2	—	2	—	—	27	—	27	1	6	209	4	215	8
Glossitis, etc. ..	—	2	—	2	—	—	5	—	5	—	—	—	—	—	—	—	32	1	32	1
Unclassified	—	5	—	5	—	—	6	—	6	—	—	43	—	43	—	2	59	4	61	2
109. Affections of the Pharynx or Tonsils—																				
Tonsillitis	1	31	—	32	—	1	270	—	271	—	3	725	—	728	2	21	851	2	872	8
Pharyngitis	—	3	—	3	—	—	7	—	7	1	1	120	—	121	1	2	204	4	206	—
Unclassified	—	20	—	20	—	—	—	—	—	—	—	—	—	—	—	—	36	—	36	—
110. Affections of the Œsophagus ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	19	1	19	—
111. A.—Ulcer of the Stomach ..	—	1	—	1	—	—	5	—	5	—	—	21	1	21	—	—	17	2	17	—
B.—Ulcer of the Duodenum ..	2	9	—	11	—	—	21	—	21	—	—	1	—	1	—	—	9	2	9	1
112. Other Affections of the Stomach—																				
Gastritis	1	5	—	6	—	—	23	—	23	—	—	126	—	126	—	7	351	9	358	2
Dyspepsia	—	3	—	3	—	—	11	—	11	—	—	76	—	76	1	2	339	1	341	1
Unclassified	1	3	—	4	—	—	19	—	19	—	—	5	—	5	—	—	88	3	88	—
113. Diarrhoea and Enteritis—																				
Under Two Years	—	—	—	—	—	—	5	—	5	—	—	66	—	66	—	15	1,762	171	1,777	23
114. Diarrhoea and Enteritis—																				
Two years and over	1	36	—	37	—	—	74	—	74	2	4	352	2	356	4	19	1,408	51	1,427	10
Colitis	—	1	—	1	—	1	8	—	9	—	4	151	—	155	3	1	207	3	208	—
Ulceration	—	2	—	2	—	—	—	—	—	—	—	—	—	—	—	—	168	—	169	5
114. A.—Sprue	—	—	—	—	—	—	3	—	3	—	—	1	—	1	—	—	—	—	—	—
B.—Diverticulitis	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	—	—	—	—	—
115. Ankylostomiasis	—	—	—	—	—	—	—	—	—	—	2	10	—	12	—	3	618	1	621	4
116. Diseases due to Intestinal Parasites—																				
(a) Cestoda (Taenia)	—	1	—	1	—	—	7	—	7	—	—	3	—	3	—	8	1,120	1	1,128	26
(b) Trematoda (Flukes)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	—	3	—
(c) Nematoda (Other than Ankylostoma)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	39	1	39	5
Ascaris	—	—	—	—	—	—	—	—	—	—	—	11	—	11	—	—	602	2	602	22
Trichocephalus dispar.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Trichina	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

RETURN OF DISEASES—IN-PATIENTS—(Contd.)

DISEASES	EUROPEAN OFFICIALS				EUROPEAN GENERAL POPULATION				ASIATIC GENERAL POPULATION (including OFFICIALS)				NATIVE GENERAL POPULATION (including OFFICIALS)			
	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year 1946	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year 1946	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Total Cases Treated	Cases remaining in Hospital at end of year 1946	
VII.—DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL) —(Contd.)																
136. Diseases (Non-venereal) of the Genital Organs of Man—																
Epididymitis	—	1	—	1	—	—	5	—	5	—	—	—	39	—	39	—
Orchitis	—	1	—	1	—	—	13	—	13	—	—	2	193	—	195	1
Hydrocele	—	1	—	1	—	—	8	—	8	—	—	5	128	—	133	8
Ulcer of Penis	—	—	—	—	—	—	—	—	—	—	—	1	88	—	89	2
Unclassified	—	2	—	2	—	—	2	—	2	—	6	134	1	140	8	
137. Cysts or other Non-malignant Tumours of the Ovaries ..	—	—	—	—	—	2	10	1	12	—	—	2	165	4	167	8
138. Salpingitis	—	2	—	2	—	—	9	—	9	—	—	4	494	3	498	8
Abscess of the Pelvis ..	—	—	—	—	—	—	1	—	1	—	—	—	28	—	28	1
139. Uterine Tumours (Non-malignant)	—	4	—	4	—	—	10	—	10	—	—	2	45	2	47	2
140. Uterine Haemorrhage (Non-puerperal)	—	2	—	2	—	1	13	—	14	1	—	1	56	4	57	1
141. A.—Metritis	—	4	—	4	—	—	14	—	14	—	—	—	77	—	77	—
B.—Other Affections of the Female Genital Organs ..	—	4	—	4	—	—	23	—	23	—	—	8	315	5	323	2
Displacement of Uterus ..	—	—	—	—	—	—	11	—	11	—	—	—	51	3	51	2
Amenorrhoea	—	—	—	—	—	—	—	—	—	—	—	—	63	—	63	—
Dysmenorrhoea	—	1	—	1	—	—	4	—	4	—	—	—	252	1	252	3
Leucorrhoea	—	—	—	—	—	—	1	—	1	—	—	—	16	—	16	1
142. Diseases of the Breast (Non-puerperal)—																
Mastitis	—	—	—	—	—	—	4	—	4	—	—	4	118	—	122	4
Abscess of Breast	—	—	—	—	—	—	—	—	—	—	—	2	111	—	113	1
Unclassified	—	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—
VIII.—PREGNANCY AND THE PUERPERAL STATE																
143. A.—Ante Natal.. .. .	—	4	—	4	—	—	10	—	10	—	1	64	—	65	59	—
B.—Normal Labour	—	—	—	—	—	—	—	—	—	—	—	—	9	7,004	159	—
C.—Accidents of Pregnancy—																
(a) Abortion	—	2	—	2	—	—	24	—	24	1	—	47	12	914	21	—
(b) Ectopic Gestation ..	—	1	—	1	—	—	2	—	2	—	—	7	4	66	4	—
(c) Other Accidents of Pregnancy	—	—	—	—	—	—	6	—	6	—	—	8	93	1,528	61	—

[illegible]

RETURN OF DISEASES—IN-PATIENTS—(Contd.)

DISEASES	EUROPEAN OFFICIALS				EUROPEAN GENERAL POPULATION					ASIATIC GENERAL POPULATION (including OFFICIALS)					NATIVE GENERAL POPULATION (including OFFICIALS)				
	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year 1946	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year 1946	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Total Cases Treated	Cases remaining in Hospital from previous year 1945	Total Admission	Total Deaths	Total Cases Treated	Remaining in Hospital at end of year 1946
XII.—DISEASES OF INFANCY—(Contd.)																			
162. Other Affections of Infancy ..	—	—	—	—	—	—	1	—	1	—	—	1	—	1	16	194	88	210	17
163. Infant Neglect—																			
(a) Infants of three months or over ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21	6	21	—
(b) Infants under 3 months ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
XIII.—AFFECTIONS OF OLD AGE																			
164. Senility ..	—	—	—	—	—	—	1	—	1	1	—	—	—	—	1	36	11	37	—
Senile Dementia ..	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	19	10	19	2
Unclassified ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	100	4	100	—
XIV.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES																			
165. Suicide by Poisoning ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
166. Corrosive Poisoning (Intentional)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
167. Suicide by Gas Poisoning ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
167. Suicide by Hanging or Strangulation ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
169. Suicide by Drowning ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
170. Suicide by Firearms ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
171. Suicide by Cutting or Stabbing Instruments ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
172. Suicide by Jumping from a Height ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
173. Suicide by Crushing (Attempted)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
174. Other Suicides (Attempted) ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
175. Food Poisoning ..	—	2	—	2	—	—	1	—	1	—	—	—	—	—	—	—	—	—	—
Botulism ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
176. Attacks of Poisonous Creatures	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Snake Bite ..	—	3	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Insect Bite ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unclassified ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
177. Other Accidental Poisonings ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
178. Burns (by Fire) ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
179. Burns (other than by Fire) ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
180. Suffocation (Accidental) ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
181. Poisoning by Gas (Accidental)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
182. Drowning (Accidental) ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

COLONY AND PROTECTORATE OF KENYA

TABLE IV.—RETURN OF DISEASES (OUT-PATIENTS)

NUMBERS TREATED DURING THE YEAR 1946

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION			ASIATIC GENERAL POPULATION (including OFFICIALS)			NATIVE GENERAL POPULATION (including OFFICIALS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
I.—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES												
1. Enteric Group—												
(a) Typhoid Fever	—	—	—	—	—	—	—	—	5	1	—	1
(b) Paratyphoid A	—	—	—	—	—	—	—	—	—	—	—	—
(c) Paratyphoid B	—	—	—	—	—	—	—	—	—	—	—	—
(d) Type not defined	—	—	—	—	—	—	—	—	—	—	—	—
2. Typhus	1	1	2	—	—	—	—	—	—	—	—	—
3. Relapsing Fever	—	—	—	—	—	—	1	—	1	90	65	155
4. Undulant Fever	—	—	—	—	—	—	—	—	—	4	6	10
5. Malaria—												
(a) Tertian	1	1	2	1	—	1	11	2	13	624	251	875
(b) Quartan	1	—	1	2	—	2	3	3	6	219	164	383
(c) Aestivo-autumnal	89	18	107	45	29	74	446	278	724	13,920	5,655	19,575
(d) Clinical	86	12	98	57	36	93	802	584	1,386	34,061	21,317	55,378
(e) Cachexia	—	—	—	—	—	—	4	2	6	875	543	1,418
(f) Blackwater	—	—	—	—	—	—	1	—	1	—	—	—
(g) Cerebral	—	—	—	—	—	—	2	2	4	—	—	—
6. Smallpox	—	—	—	—	—	—	—	—	—	31	10	41
Alastrim	—	—	—	—	—	—	—	—	—	—	—	—
7. Measles	4	—	4	1	—	1	15	13	28	401	254	655
8. Scarlet Fever	1	—	1	—	—	—	—	—	—	—	—	—
9. Whooping Cough	—	—	—	2	3	5	103	64	167	3,991	4,327	8,318
10. Diphtheria	—	—	—	—	—	—	1	5	6	1	—	1
11. Influenza	138	27	165	12	20	32	688	851	1,539	14,718	4,775	19,493
12. Miliary Fever	—	—	—	—	—	—	—	—	—	—	—	—
13. Mumps	3	1	4	5	5	10	36	30	66	847	478	1,325
14. Cholera	—	—	—	—	—	—	—	—	—	—	—	—
15. Epidemic Diarrhoea	1	3	4	—	—	—	—	—	—	133	114	247
16. Dysentery—												
(a) Amoebic	14	3	17	15	9	24	30	19	49	1,688	1,229	2,917
(b) Bacillary	2	—	2	2	2	4	6	—	6	1,003	544	1,547
(c) Undefined or due to other causes	4	—	4	4	2	6	21	42	63	1,454	744	2,198

RETURN OF DISEASES—OUT-PATIENTS—(Contd.)

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION			ASIATIC GENERAL POPULATION (including OFFICIALS)			NATIVE GENERAL POPULATION (including OFFICIALS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
I.—EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES—(Contd.)												
39. Soft Chancre	—	—	—	1	—	1	—	—	—	108	9	117
40. A.—Gonorrhoea and its Complications	—	—	—	13	—	13	48	12	60	5,304	1,711	7,012
B.—Gonorrhoeal Ophthalmia	—	—	—	—	—	—	—	—	—	98	109	207
C.—Gonorrhoeal Arthritis	—	—	—	—	—	—	—	—	—	188	33	221
D.—Granuloma Venereum	—	—	—	—	—	—	—	—	—	—	6	6
41. Septicæmia	—	—	—	—	—	—	—	—	—	—	8	8
42. Other Infectious Diseases	—	—	—	1	—	1	—	—	—	6	—	6
II.—GENERAL DISEASES NOT MENTIONED ABOVE												
43. Cancer or other Malignant Tumours of the Buccal Cavity	—	—	—	—	—	—	—	—	—	—	—	—
44. Cancer or other Malignant Tumours of the Stomach or Liver	—	—	—	—	2	2	—	—	—	—	—	—
45. Cancer or other Malignant Tumours of the Peritoneum Intestines, Rectum	—	—	—	—	5	5	—	—	—	—	—	—
46. Cancer or other Malignant Tumours of the Female Genital Organs	—	—	—	—	3	3	—	1	1	—	3	3
47. Cancer or other Malignant Tumours of the Breast	—	—	—	—	3	3	—	1	1	—	—	—
48. Cancer or other Malignant Tumours of the Skin	—	—	—	1	—	1	—	—	—	—	—	—
49. Cancer or other Malignant Tumours of Organs not Specified	2	—	2	—	2	2	—	—	—	1	—	1
50. Tumours, Non-malignant	31	11	42	13	28	41	5	7	12	409	193	602
51. Acute Rheumatism	54	25	79	10	30	40	20	4	24	1,125	638	1,763
52. Chronic Rheumatism	29	16	45	6	13	19	181	159	340	8,271	4,193	12,464
53. Scurvy (including Barlow's Disease)	—	—	—	—	—	—	2	—	2	52	19	71
54. Pellagra	—	—	—	—	—	—	—	2	2	204	81	285
55. Beri-beri	—	—	—	—	—	—	—	4	4	16	8	24
56. Rickets	—	—	—	—	—	—	—	5	5	8	4	12
57. Diabetes (not including Insipidus)	6	4	10	2	2	4	6	17	23	12	—	12
58. Anæmia—												
(a) Pernicious	5	3	8	—	3	3	3	31	34	—	—	—
(b) Other Anæmias and Chlorosis	1	3	4	7	14	21	56	151	207	856	563	1,419
59. Diseases of the Pituitary Body	—	—	—	—	—	—	—	—	—	—	—	—
60. Diseases of the Thyroid Gland—												
(a) Exophthalmic Goitre	—	—	—	—	—	—	—	2	2	3	9	12
(b) Other Diseases of the Thyroid Gland, Myxœdema.,	—	6	6	1	4	5	—	8	8	25	27	52

RETURN OF DISEASES—OUT-PATIENTS—(Contd.)

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION			ASIATIC GENERAL POPULATION (including OFFICIALS)			NATIVE GENERAL POPULATION (including OFFICIALS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
III.—AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES— —(Contd.)												
85. Affections of the Organs of Vision— —(Contd.)												
(c) Tumours of the Eye ..	3	1	4	—	—	—	4	2	6	10	3	13
(d) Other Affections of the Eye ..	29	5	34	28	17	45	97	63	160	4,014	2,554	6,568
86. Affections of the Ear or Mastoid Sinus	119	19	138	53	69	122	206	385	591	7,546	4,695	12,241
IV.—AFFECTIONS OF THE CIRCULATORY SYSTEM												
87. Pericarditis	—	—	—	1	—	1	—	—	—	1	1	2
88. Acute Endocarditis or Myocarditis	—	—	—	2	—	2	—	—	—	2	8	10
89. Angina Pectoria	3	—	3	1	—	1	—	1	1	—	—	—
90. Other Diseases of the Heart— (a) Valvular—	—	—	—	—	2	2	—	—	—	21	15	36
Mitral	—	—	—	—	2	2	1	1	2	17	7	24
Aortic	—	—	—	—	—	—	—	—	—	1	—	1
Tricuspid	—	—	—	—	—	—	—	—	—	2	—	2
Pulmonary	—	—	—	—	—	—	1	—	1	—	—	—
(b) Myocarditis	—	1	1	5	7	12	2	1	3	—	1	1
(c) Unclassified	6	3	9	3	5	8	15	9	24	16	9	25
91. Diseases of the Arteries— (a) Aneurism	—	—	—	—	—	—	—	—	—	—	1	1
(b) Arterio-Sclerosis	—	—	—	1	—	1	1	5	6	—	—	—
(c) Other Diseases	4	—	4	2	—	2	—	—	—	—	—	—
92. Embolism or Thrombosis (Non-cerebral)	6	—	6	1	—	1	1	—	1	1	—	1
93. Diseases of the Veins— Hæmorrhoids	45	9	54	8	11	19	34	5	39	35	7	42
Varicose Veins	5	6	11	2	21	23	2	1	3	16	3	19
Phlebitis	3	—	3	1	2	3	3	1	4	15	5	20
Unclassified	—	—	—	—	—	—	—	—	—	—	—	—
94. Diseases of the Lymphatic System— Lymphangitis	5	—	5	1	2	3	1	22	23	147	48	195
Lymphadenitis, Bubo (Non-specific)	8	1	9	11	7	18	28	24	52	1,631	578	2,209
95. Hæmorrhage of Undetermined Cause	—	—	—	—	—	—	1	—	1	4	—	4
96. Other Affections of the Circulatory System	16	4	20	5	8	13	2	2	4	260	250	510

RETURN OF DISEASES—OUT-PATIENTS—(Contd.)

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION			ASIATIC GENERAL POPULATION (including OFFICIALS)			NATIVE GENERAL POPULATION (including OFFICIALS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
VI.—DISEASES OF THE DIGESTIVE SYSTEM.—(Contd.)												
114A. Sprue	—	—	—	—	—	—	—	—	—	—	—	—
114B. Diverticulitis	—	—	—	—	—	—	—	—	—	—	—	—
115. Ankylostomiasis	1	—	1	—	1	1	11	3	14	750	498	1,248
116. Diseases due to Intestinal Parasites—												
(a) Cestoda (Tænia)	5	2	7	1	6	7	6	9	15	18,004	7,031	25,035
(b) Trematoda (Flukes).. ..	—	—	—	—	—	—	—	—	—	101	48	149
(c) Nematoda (other than Ankylostoma)	—	—	—	—	—	—	—	—	—	106	70	176
Ascaris	—	—	—	—	2	2	36	15	51	8,064	9,126	17,190
Trichocephalus dispar. ..	—	—	—	—	—	—	—	2	2	22	21	43
Trichina	—	—	—	—	—	—	—	—	—	—	—	—
Dracunculus	—	—	—	—	—	—	—	—	—	—	—	—
Strongylus	1	—	1	1	2	3	—	3	3	44	31	75
Oxyuris	—	—	—	—	—	—	—	—	—	97	60	157
(d) Coccidia	—	—	—	—	—	—	—	—	—	26	18	44
(e) Other Parasites	4	3	7	3	3	7	1	1	1	248	46	294
(f) Unclassified	19	4	23	23	22	45	2	10	3	1,298	592	1,890
117. Appendicitis	19	—	19	16	6	22	3	7	10	3	6	9
118. Hernia	14	6	20	3	5	8	6	3	9	166	11	177
119. A.—Affections of the Anus, Fistula etc.	—	2	2	1	11	12	1	6	7	46	7	53
B.—Other Affections of the Intestines	2	—	2	—	1	1	—	—	—	495	251	746
Enteroptosis	14	5	19	2	5	7	295	242	537	25,752	16,226	41,978
Constipation	—	—	—	—	—	—	—	—	—	—	—	—
120. Acute Yellow Atrophy of the Liver	—	—	—	—	—	—	—	—	—	—	—	—
121. Hydatid Cyst	—	—	—	—	—	—	—	—	—	—	—	—
122. Cirrhosis of the Liver—												
(a) Alcoholic	2	—	2	—	—	—	—	—	—	1	—	1
(b) Other Forms	1	—	1	3	5	8	—	—	—	3	—	3
123. Biliary Calculus	—	—	—	—	—	—	—	—	—	—	—	—
124. Other Affections of the Liver—												
Abscess	8	1	9	1	1	2	—	—	—	5	3	8
Hepatitis	3	3	6	1	4	5	27	29	56	529	260	789
Cholecystitis	—	—	—	—	—	—	1	8	9	1	—	1
Jaundice	1	1	2	—	—	—	6	12	18	247	149	396
Unclassified	—	—	—	—	4	4	—	—	—	17	88	105
125. Diseases of the Pancreas ..	—	—	—	—	—	—	—	—	—	—	—	—
126. Peritonitis (of Unknown Cause) ..	—	—	—	—	—	—	—	—	—	2	2	4
127. Other Affections of the Digestive System	—	—	—	3	—	3	1	2	3	213	43	256

VII.—DISEASES OF THE GENITO-URINARY SYSTEM (NON-VENEREAL)											
128.	Acute Nephritis	..	..	..	..	..	..	..	..	..	..
129.	Chronic Nephritis	..	..	..	..	..	..	..	..	..	..
130.	A.—Chyluria	..	..	..	..	..	..	..	..	..	..
	B.—Schistosomiasis	..	..	..	..	..	..	..	..	..	..
131.	Other Affections of the Kidneys—	..	..	..	..	..	..	..	..	..	..
	Pyelitis ..	2	14	7	8	..	..	..	..	..	..
	Unclassified ..	..	..	..	..	..	..	..	..	..	..
132.	Urinary Calculus ..	..	..	..	..	..	..	..	..	..	..
133.	Diseases of the Bladder—	..	..	..	..	..	..	..	..	..	..
	Cystitis ..	8	..	..	..	..	..	..	..	..	..
	Unclassified ..	..	..	..	..	..	..	..	..	..	..
134.	Diseases of the Urethra—	..	..	..	..	..	..	..	..	..	..
	(a) Stricture ..	2	5	..	..	..	..	..	..	..	..
	(b) Other ..	5	..	..	..	..	..	..	..	..	..
135.	Diseases of the Prostate—	..	..	..	..	..	..	..	..	..	..
	Hypertrophy ..	6	..	..	..	..	..	..	..	..	..
	Prostatitis ..	..	..	..	..	..	..	..	..	..	..
	Unclassified ..	..	..	..	..	..	..	..	..	..	..
136.	Diseases (Non-veneral) of the Genital Organs of Man—	..	..	..	..	..	..	..	..	..	..
	Epididymitis ..	1	7	4	..	..	..	..	..	..	..
	Orchitis ..	7	..	..	..	..	..	..	..	..	..
	Hydrocele ..	4	..	..	..	..	..	..	..	..	..
	Ulcer of Penis ..	..	..	..	..	..	..	..	..	..	..
	Unclassified ..	1	..	..	..	..	..	..	..	..	..
137.	Cysts or other Non-malignant Tumours of the Ovaries	..	..	..	..	..	..	..	..	..	..
138.	Salpingitis ..	..	..	..	..	..	..	..	..	..	..
139.	Abscess of the Pelvis	..	..	..	..	..	..	..	..	..	..
139.	Uterine Tumours (Non-malignant)	..	..	..	..	..	..	..	..	..	..
140.	Uterine Hæmorrhage (Non- puerperal)	..	..	..	..	..	..	..	..	..	..
141.	A.—Metritis	..	..	..	..	..	..	..	..	..	..
	B.—Other Affections of the Female Genital Organs ..	..	..	..	..	..	..	..	..	..	..
	Displacement of Uterus ..	..	..	..	..	..	..	..	..	..	..
	Amenorrhœa ..	..	..	..	..	..	..	..	..	..	..
	Dysmenorrhœa ..	..	..	..	..	..	..	..	..	..	..
	Leucorrhœa ..	..	..	..	..	..	..	..	..	..	..
142.	Diseases of the Breast (Non- puerperal)—	..	..	..	..	..	..	..	..	..	..
	Mastitis ..	..	..	..	..	..	..	..	..	..	..
	Abscess of Breast	..	..	..	..	..	..	..	..	..	..
	Unclassified ..	..	..	..	..	..	..	..	..	..	..

VIII.—PREGNANCY AND THE PUERPERAL STATE

143.	A.—Ante Natal ..	..	..	..	..	..	..	..	..	..	..
	B.—Normal Labour	..	..	..	..	..	..	..	..	..	..
	C.—Accidents of Pregnancy—	..	..	..	..	..	..	..	..	..	..
	(a) Abortion ..	..	..	..	..	..	..	..	..	..	..
	(b) Ectopic Gestation ..	..	..	..	..	..	..	..	..	..	..
	(c) Other Accidents of Pregnancy	..	..	..	..	..	..	..	..	..	..

RETURN OF DISEASES—OUT-PATIENTS—(Contd.)

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION			ASIATIC GENERAL POPULATION (including OFFICIALS)			NATIVE GENERAL POPULATION (including OFFICIALS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
VIII.—PREGNANCY AND THE PUERPERAL STATE—(Contd.)												
144. Puerperal Hæmorrhage	—	—	—	—	14	—	—	—	—	—	—	—
145. Other Accidents of Parturition ..	—	—	—	—	—	—	—	—	—	—	—	—
146. Puerperal Septicæmia	—	—	—	—	—	—	—	—	—	—	57	57
147. Phlegmasia Dolens	—	—	—	—	—	—	—	—	—	—	—	—
148. Puerperal Eclampsia	—	—	—	—	—	—	—	—	—	—	—	—
149. Sequelæ of Labour	—	—	—	—	—	—	—	3	3	—	5	5
150. Puerperal Affections of the Breast ..	—	—	—	—	—	—	—	—	—	—	1	1
IX.—AFFECTIONS OF THE SKIN AND CELLULAR TISSUES												
151. Gangrene	1	2	3	—	—	—	18	9	27	8	1	9
152. Boil	43	4	47	46	35	81	200	479	679	3,425	890	4,315
Carbuncle	4	—	4	2	1	3	1	—	1	67	53	120
153. Abscess	27	7	34	19	35	54	68	67	135	5,092	1,743	6,835
Whitlow	5	2	7	6	3	9	6	58	64	834	253	1,087
Cellulitis	47	8	55	26	41	67	35	80	115	4,583	1,717	6,300
Ulcers	21	3	24	14	9	23	370	303	673	42,677	19,266	61,943
154. A.—Tinea	4	—	4	8	15	23	20	46	66	445	194	639
B.—Scabies	2	1	3	2	—	2	121	174	295	14,867	8,781	23,648
Other Diseases of the Skin—												
Erythema	—	—	—	8	—	8	4	11	15	109	30	139
Urticaria	8	3	11	9	11	20	132	146	278	1,477	597	2,074
Eczema	19	1	20	6	5	11	105	103	208	1,808	1,147	2,955
Herpes	9	2	11	1	—	1	6	24	30	312	145	457
Psoriasis	2	2	4	—	2	2	5	7	12	356	64	420
Elephantiasis	1	—	1	—	—	—	—	—	—	182	138	320
Myiasis	—	—	—	3	—	3	—	—	—	83	44	127
Chigoes	3	2	5	2	2	4	10	13	23	635	463	1,098
Cutaneous Leishmaniasis	—	—	—	—	—	—	—	—	—	—	—	—
Dermatitis	—	—	—	—	—	—	—	—	—	1,885	1,058	2,943
Unclassified	112	27	139	66	71	137	133	121	254	2,624	1,573	4,197
X.—DISEASES OF BONES AND ORGANS OF LOCOMOTION (OTHER THAN TUBERCULOUS)												
156. Diseases of Bones—												
Osteitis	1	—	1	3	2	5	5	6	11	225	50	275
157. Diseases of Joints—												
Arthritis	24	4	28	21	22	43	22	23	45	1,647	743	2,390
Synovitis	16	1	17	8	7	15	15	5	20	1,291	383	1,674
158. Other Diseases of Bones or Organs of Locomotion	72	8	80	40	44	84	216	165	381	7,577	2,785	10,362

RETURN OF DISEASES—OUT-PATIENTS—(Contd.)

DISEASES	EUROPEAN OFFICIALS			EUROPEAN GENERAL POPULATION			ASIATIC GENERAL POPULATION (including OFFICIALS)			NATIVE GENERAL POPULATION (including OFFICIALS)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
XIV.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES—(Contd.)												
188. Wounds (Crushing, e.g. Railway Accidents, etc.)..	2	1	3	—	—	—	6	1	7	41	64	105
189. Injuries Inflicted by Creatures, Bites, Kicks, etc. . .	6	—	6	7	—	7	2	3	5	661	309	970
190. Wounds Inflicted on Active Service	—	—	—	—	—	—	—	—	—	189	—	189
191. Executions of Civilians by Belli- gerents . .	—	—	—	—	—	—	—	—	—	—	—	—
192. A.—Over Fatigue . .	—	—	—	—	—	—	—	—	—	17	4	21
B.—Hunger or Thirst . .	—	—	—	—	—	—	—	—	—	—	—	—
193. Exposure to Cold, Frostbite, etc.	—	—	—	—	—	—	—	—	—	—	—	—
194. Exposure to Heat— Heatstroke . .	—	—	—	—	—	—	—	—	—	—	—	—
Sunstroke . .	—	—	—	—	—	—	—	—	—	—	—	—
195. Lightning Stroke . .	—	—	—	—	—	—	—	—	—	—	—	—
196. Electric Shock . .	—	—	—	—	—	—	—	—	—	5	—	5
197. Murder by Firearms . .	—	—	—	—	—	—	—	—	—	—	—	—
198. Murder by Cutting or Stabbing Instruments . .	—	—	—	—	—	—	—	—	—	—	—	—
199. Murder by other means . .	—	—	—	—	—	—	—	—	—	—	—	—
200. Infanticide (Murder of an Infant Under one year) . .	—	—	—	—	—	—	—	—	—	—	—	—
201. A.—Dislocation . .	3	—	3	7	1	8	2	1	3	151	74	225
B.—Sprain . .	59	19	78	33	34	67	90	39	129	3,146	825	3,971
C.—Fracture . .	64	24	88	75	60	135	12	16	28	303	109	412
202. Other External Injuries . .	173	29	202	146	84	230	664	979	1,643	39,671	10,070	49,741
203. Deaths by Violence of Unknown Cause . .	—	—	—	—	—	—	—	—	—	4	1	5
XV.—ILL-DEFINED DISEASES												
204. Sudden Death (Cause Unknown)	—	—	—	—	—	—	—	—	—	—	—	—
205. A.—Diseases not already specified or ill-defined—												
Ascites . .	—	—	—	—	—	—	—	—	—	63	28	91
Edema . .	1	—	1	2	1	3	5	6	11	388	309	697
Asthenia . .	41	20	61	28	53	81	65	51	116	97	17	114
Shock . .	—	—	—	—	—	—	61	6	67	—	5	5
Hyperpyrexia . .	—	—	—	—	—	—	—	—	—	560	161	721
Others . .	1,200	380	1,580	699	840	1,539	1,125	74	1,199	21,578	7,387	28,931
B.—Malingering . .	—	—	—	—	—	—	—	—	—	73	1	74
GRAND TOTAL . .	3,621	1,067	4,688	2,192	2,687	4,879	11,123	12,277	23,400	510,808	261,800	772,608

TABLE V.—METEOROLOGICAL SUMMARY FOR EIGHT SELECTED STATIONS IN KENYA FOR 1946

MONTH		Temperature (°F.)			Relative Humidity Percentage		Rainfall (inches)		Temperature (°F.)			Relative Humidity Percentage		Rainfall (inches)	
		Maximum	Minimum	Mean	0830 East	1430 East	1946	Average	Maximum	Minimum	Mean	0830 East	1430 East	1946	Average
..	..	67.6	45.2	56.4	EQUATOR		0.13	0.67	94.9	71.9	83.4	GARISSA		0.04	0.62
..	..	70.4	46.4	58.4	74	46	0.20	1.60	96.5	72.5	84.5	78	47	0.00	0.33
..	..	69.9	47.7	58.8	63	36	2.06	3.45	98.5	74.5	86.5	74	41	0.00	1.07
..	..	68.0	48.2	58.1	69	51	5.78	5.78	97.9	76.6	87.3	76	53	0.10	2.72
..	..	65.4	48.2	56.8	86	58	4.20	5.70	95.3	74.6	84.6	75	48	0.10	0.37
..	..	61.9	47.6	54.7	82	71	7.65	4.97	92.7	72.2	82.5	73	45	0.18	0.30
..	..	60.5	46.7	53.6	87	71	6.52	5.93	90.6	70.6	80.6	73	44	0.00	0.13
..	..	58.8	46.6	52.7	84	79	10.13	7.64	90.0	70.5	80.3	72	51	0.00	0.32
..	..	62.8	46.0	54.4	85	63	3.36	3.93	91.2	71.4	81.3	75	47	0.28	0.29
..	..	64.1	47.1	55.6	79	59	3.20	1.28	93.7	74.0	83.8	75	43	1.97	0.96
..	..	64.6	47.1	55.9	82	52	0.70	3.38	94.1	76.6	85.3	81	55	0.05	2.15
..	..	66.3	46.3	56.3	84	46	0.32	1.49	95.0	76.2	85.6	79	50	0.10	2.97
..	..	65.0	46.9	56.0	79	56	46.71	45.82	94.2	73.5	83.8	75	48	2.82	12.23
..	..	..	..	..	KISUMU		0.07	1.64	81.9	52.0	66.9	KITALE		0.03	0.64
..	..	90.1	63.5	76.8	51	33	0.00	3.17	85.2	53.3	69.3	62	29	0.40	1.83
..	..	93.4	64.1	78.7	45	30	4.75	6.77	82.7	54.5	68.6	54	25	1.80	3.11
..	..	89.7	65.5	77.6	63	38	4.09	5.96	77.9	56.5	67.2	82	58	6.79	5.39
..	..	83.6	65.7	74.7	73	52	5.96	7.67	75.7	55.5	65.6	82	60	7.20	6.52
..	..	82.4	64.3	73.3	80	57	7.31	4.30	72.5	54.4	63.5	86	68	6.77	4.59
..	..	79.9	62.7	71.3	80	62	2.35	2.42	72.4	53.3	62.9	85	63	7.48	5.77
..	..	81.0	61.0	71.0	76	54	7.99	4.12	71.2	53.9	62.5	91	72	11.69	6.37
..	..	79.5	62.0	70.7	80	58	5.75	2.41	74.5	52.6	63.5	81	62	4.91	4.08
..	..	82.2	61.4	71.8	73	59	2.18	1.85	—	—	—	79	—	1.47	3.32
..	..	84.8	63.4	74.1	66	53	4.40	4.26	—	—	—	76	—	2.04	2.17
..	..	85.3	62.9	74.1	71	53	3.64	3.23	—	—	—	73	—	0.83	1.13
..	..	84.6	61.9	73.3	68	48	48.49	47.80	—	—	—	77	—	51.41	44.92
..	..	84.7	63.2	73.9	69	50	..	..	..	..	..	..	..	..	..
..	..	..	..	..	MOMBASA		0.89	1.00	82.6	55.9	69.3	NAIROBI		0.16	1.47
..	..	88.9	74.0	81.5	78	62	0.00	0.65	86.1	56.5	71.3	70	38	0.23	2.13
..	..	88.8	74.0	81.4	80	64	0.22	2.56	84.5	58.2	71.3	66	32	1.43	5.27
..	..	90.6	74.9	82.7	80	64	5.18	7.88	79.2	60.8	70.0	72	40	6.61	7.71
..	..	90.0	76.5	83.3	86	69	11.04	12.79	76.5	59.5	68.0	86	51	3.12	5.17
..	..	85.1	73.2	79.1	90	72	2.47	4.63	76.6	54.9	65.7	85	59	0.11	1.62
..	..	83.9	71.2	77.5	90	71	1.68	3.57	73.7	54.2	63.9	81	54	0.38	0.59
..	..	82.1	69.3	75.7	92	70	3.18	2.51	70.2	54.9	62.5	80	53	1.83	0.97
..	..	82.1	69.6	75.9	90	73	14.01	2.50	75.3	56.2	65.7	88	66	1.66	0.92
..	..	82.1	69.9	76.0	93	73	6.36	3.39	78.7	57.8	68.3	87	55	6.71	1.93
..	..	85.0	71.3	78.1	84	70	1.63	3.85	76.6	58.9	67.7	82	46	3.95	4.02
..	..	87.6	73.9	80.7	84	73	2.37	2.32	78.3	57.7	68.0	83	54	1.63	2.49
..	..	89.6	74.0	81.8	82	69	49.03	47.65	78.2	57.1	67.6	76	47	27.82	34.29
..	..	86.3	72.7	79.5	86	69	..	..	..	..	..	80	50	..	..
..	..	..	..	..	NAKURU		0.32	0.66	89.3	68.8	79.1	VOI		0.08	1.32
..	..	84.3	45.8	65.1	67	28	0.00	1.54	91.8	68.7	80.3	74	39	0.00	1.24
..	..	87.8	45.5	66.7	55	19	0.32	2.57	92.0	69.0	80.5	73	35	1.55	2.98
..	..	87.9	50.1	69.0	62	25	5.73	4.99	91.0	70.9	80.9	74	36	3.02	3.84
..	..	82.2	52.5	67.3	78	47	1.93	3.63	85.4	68.5	76.9	72	39	3.45	1.25
..	..	79.5	53.2	66.3	81	51	3.27	2.20	84.5	66.2	75.3	67	47	0.00	0.34
..	..	77.4	51.2	64.3	84	51	3.23	1.63	82.0	64.0	73.0	70	40	0.09	0.11
..	..	76.0	50.7	63.3	83	53	4.09	1.99	81.0	64.6	72.8	72	42	0.25	0.35
..	..	75.1	51.9	63.5	85	55	4.51	1.69	80.5	64.6	72.5	74	46	5.44	0.49
..	..	77.2	50.0	63.6	82	54	1.25	1.92	85.8	66.0	75.9	70	53	1.18	0.91
..	..	78.7	48.3	63.5	77	48	1.02	2.29	88.2	68.7	78.5	74	46	0.59	3.80
..	..	80.1	48.8	64.4	74	44	0.42	1.37	88.4	69.9	79.1	74	47	1.58	5.12
..	..	82.0	46.6	64.3	67	33	26.09	26.49	86.7	67.5	77.1	72	46	17.23	21.75
..	..	80.7	49.7	65.1	75	42	..	..	..	..	..	..	43	..	..

ANNUAL RAINFALL FOR 100 SELECTED STATIONS IN KENYA—1946

	TOTAL inches	AVERAGE inches		TOTAL inches	AVERAGE inches
CENTRAL PROVINCE :—			NYANZA PROVINCE—(Continued) :—		
Embu, District Office	55.15	40.56	Malakisi, Salvation Army	62.37	47.44
Donyo Sabuk Estate	33.78	31.75	Masara, K. G. Syndicate	39.81	45.01
Fort Hall, District Office	47.14	45.16	Maseno, Veterinary Station	75.15	58.86
Githumu, A. I. Mission	66.36	56.91	Miwani, Railway Station	44.54	44.60
Kabondori	26.36	27.47	Mugunga	79.54	71.48
Kanziko Dispensary	14.02	18.84	Muhuroni, Railway Station	52.58	61.77
Katze Dispensary	17.99	25.96	Myanga, Railway Station	56.73	51.76
Keruguya Hospital	65.13	52.00	Nangina Mission	58.52	52.72
Kiambu, District Office	37.25	40.38	Nyalunya	40.33	36.83
Kiambu, Kianjibbi Estate	41.62	41.17	Oyugis Dispensary	61.05	51.87
Kikuyu, Railway Station	39.95	34.06	Rangala School	68.66	57.31
Kitui, District Office	16.86	20.70	Songhor, Kaabirir Estate	50.93	56.09
Kiu, Railway Station	13.19	22.38	Sotik, Monieri Estate	49.37	53.12
Konza, Railway Station	10.08	17.92			
Lamuria, Sirrima Estate	18.58	26.91	RIFT VALLEY PROVINCE :—		
Limuru, Railway Station	30.58	38.93	Cherangani, Kipkoitet Estate	49.60	41.90
Machakos, District Office	27.13	35.69	Elburgon, Forest Station	33.12	41.22
Makindu, Meteorological Station	15.36	24.86	Eldoret, District Office	49.92	40.35
Matungulu	55.77	51.55	Elmenteita, The Highlands	27.17	34.54
Meru, District Office	27.82	34.29	Gilgil, Railway Station	17.14	23.67
Nairobi, Railway Station	36.78	38.33	Hoey's Bridge, Kitani Syndicate	55.77	48.36
Nanyuki, Meteorological Station	23.05	26.74	Kabarnet, District Office	51.75	51.63
Ngong, Forest Station	26.58	35.52	Kapenguria, District Office	57.66	45.89
Nyeri, P.W.D.	26.00	36.19	Kapsabet, District Office	63.27	61.07
Ruiru, Sukari, Ltd.	23.17	27.58	Kaptagat, Forest Station	49.44	46.13
Thika, District Office	30.32	30.61	Kitale, District Office	51.41	44.92
Zombe, Dispensary	28.94	30.58	Lugari, Railway Station	63.97	57.67
			Maji Mazuri, Forest Station	47.71	47.21
COAST PROVINCE :—			Maralal, District Office	18.21	24.85
Gazi, Kenya Sugar Co., Ltd.	66.54	49.92	Moiben, Karuna Farm	37.77	40.24
Kilifi, District Officer	36.82	36.84	Molo, Railway Station	48.38	50.97
Kipini, District Officer	23.40	45.45	Mount Elgon, Forest Station	50.63	46.04
Kwale, District Officer	51.12	40.09	Naivasha, Meteorological Station	23.09	23.15
Lamu, Post Office	33.39	36.60	Nakuru, District Office	26.09	34.57
Malindi, District Officer	48.14	40.25	Nakuru, Solai Mennegai	24.99	34.95
Mombasa, Old Observatory	49.72	47.65	Njoro, Plant Breeding Station	33.74	35.69
Ramisi, Kenya Sugar Co., Ltd.	60.43	56.72	Ol Joro Orok, Muturakwa Estate	43.85	47.33
Taveta, Sisal Estate	16.92	27.69	Rongai, Miti Mingi Estate	28.69	34.88
Voi, Meteorological Station	17.23	21.75	Rumuruti, District Office	14.92	25.92
Wesu, Hospital	57.16	58.22	Subukia, Ol Momoi Estate	40.42	41.38
			Tambach, District Office	44.90	44.70
NYANZA PROVINCE :—			Thomson's Falls, North's Estate	29.74	35.12
Aluor Mission	71.85	52.24	Turi, Home Farm	38.01	46.72
Asumbi Mission	60.21	61.15			
Bunyore Dispensary	70.87	66.15	EXTRA PROVINCIAL DISTRICTS :—		
Equator, Meteorological Station	46.71	45.82	Garissa, District Office	2.82	12.23
Kadimu Dispensary	36.65	34.17	Isiolo, District Office	20.27	21.18
Kakamega, District Office	80.46	74.60	Lodwar, District Office	2.50	5.66
Kericho, District Office	65.82	70.91	Magadi Soda Co.	18.96	27.34
Kisii, District Office	57.96	66.81	Mandera, District Office	6.08	8.25
Kisumu, Provincial Commissioner's Office	55.94	44.60	Marsabit, District Office	30.89	31.93
Kitere, K.C. Goldfields	78.86	68.77	Moyale, District Office	22.09	25.77
Litein Mission	65.78	63.42	Narok, Meteorological Station	18.00	26.23
Lumbwa, Railway Station	45.09	45.13	Wajir, District Office	5.98	8.42

Staff					
Senior Pathologist	...	...	...	...	1
Pathologists	...	...	...	...	2
Biochemist	...	...	...	...	1
Medical Biologist	...	...	...	...	1
Laboratory Superintendent	...	...	...	...	1
Laboratory Technicians	...	...	...	...	6
Junior Laboratory Technician	...	...	...	...	1
Laboratory Technician (Learner)	...	...	...	...	1
Laboratory Assistants (Asiatic)	...	...	...	...	4
Senior Laboratory Assistants (African)	...	...	...	...	14
Librarian and Stenographer	...	...	...	...	1
Librarian	...	...	...	...	1
Storekeeper	...	...	...	...	1

The activities of the Laboratory during the year were confined entirely to routine diagnosis and vaccine work. The qualified staff, which had been kept at a bare minimum during the war years was further reduced by the retirement of Dr. J. I. Roberts, who has not yet been replaced. This has thrown an additional strain on the personnel.

Reference was made in the Annual Report for 1945 to the necessity for posting a clinical pathologist to Mombasa and a European laboratory technician to Kisumu and Nakuru. This has not been possible.

Buildings

For many years it has been obvious that better store accommodation must be provided, as the present stores are utterly inadequate. New buildings are urgently required for small laboratory animals and the present insectory is useless for the present needs of the Insect-borne Diseases section. Preliminary plans for these buildings have been drawn up and it is hoped that they can be started in the near future.

Library

The appointment of a full-time librarian during the year has permitted of a complete reorganization of the library. Cataloguing is proceeding and shortly the librarian will be available for preparing lists of references and preparing abstracts.

A.—Section of Medical Biology

(a) Faeces Examinations.

Helminths:

Number of positive stools examined: 6,800.
Number of negative stools examined: 2,474.
Total number of stools examined: 9,274.

					Europeans	Asians	Africans
Helminths—							
<i>Taenia saginata</i>	..	..	..	..	14	15	754
<i>A. lumbricoides</i>	..	..	..	..	20	20	404
<i>Ankylostoma</i>	..	..	..	..	14	34	577
<i>S. mansoni</i>	..	..	..	..	18	11	113
<i>E. vermicularis</i>	..	..	..	..	10	14	39
<i>T. trichura</i>	..	..	..	..	19	40	212
<i>H. nana</i>	..	..	..	..	5	5	10
<i>T. colubriformis</i>	..	..	..	..	7	9	15
<i>S. stercolis</i>	..	..	..	..	2	2	37
Protozoa—							
<i>E. histolytica</i> (active)	..	..	..	..	10	9	58
" (cysts)	..	..	..	..	27	7	98
<i>E. coli</i>	..	..	..	..	204	127	1,091
<i>I. butschlii</i>	..	..	..	..	55	34	317
<i>G. intestinalis</i>	..	..	..	..	55	27	92
<i>G. mesnili</i>	..	..	..	..	57	17	199
<i>I. hominis</i>	..	..	..	..	—	1	—
<i>E. nana</i>	..	..	..	..	—	1	—
Unidentified flagellate cysts	..	..	..	..	256	122	1,036
Charcot Leyden crystals	..	..	..	..	78	36	109

(b) *Urine Examinations for Ova S. hæmatobium.*

Number of urines examined: 177;

Ova of *S. hæmatobium* found: 23.

(c) *Blood Examinations for Parasitic Infections.*

	Europeans	Asians	Africans
<i>P. falciparum</i>	251	302	998
<i>P. falciparum crescents</i>	3	15	37
<i>P. vivax</i>	5	5	8
<i>P. malarix</i>	8	5	4
<i>P. ovale</i>	1	—	1
<i>P. wilsoni</i>	—	—	—
Mixed infections	2	1	—
<i>M. bancrofti</i>	—	1	1
<i>M. perstans</i>	—	—	17
<i>T. recurrentis</i>	—	1	21
Leishman—Donovan bodies	—	—	3

Total number of negative slides: 19,256.

Total number of positive slides: 1,635.

Total number of slides examined: 20,891.

(d) *Hæmatological Examinations.*

Total examinations 4,103, made up by the following:—

	Europeans	Asians	Africans
Differential cell counts	572	562	45
Total blood counts	875	232	580
Leucocyte counts	75	38	1,097
Platelet counts	4	—	—
Reticulocyte counts	9	6	8

(e) *Miscellaneous Examinations.*

Various examinations performed: 18.

During the year a total of 34,463 specimens have been examined.

B.—Section of Biochemistry

1.—ROUTINE WORK

The following table shows the number and nature of the routine examinations:—

(a) *Urine—*

Routine examination—i.e. reaction, specific gravity, albumin, sugar and deposit	2,984
Sugar and acetone	242
Spectroscopic examination	4
Albumin—qualitative	26

Albumin—quantitative	5
Sugar—qualitative	10
Deposit	41
Albumin and deposit	23
Quinine	1
Bile	37
Acetone	15
“M. & B” crystals	1
Sugar and albumin	11
Acetone and diacetic acid	1
Cystine	4
Ehrlich’s diazo reaction	1
Specific gravity albumin and sugar	1
Albumin and bile	1
Urobilin	7
Sugar and deposit	1
<i>(b) Blood—</i>	
Urea	312
Sugar	58
Calcium	3
CO ₂ combining capacity	1
Cholesterol	1
Total proteins, albumin and globulin	4
Uric acid	2
Van-den-Bergh test	35
<i>(c) Faeces—</i>	
Occult blood	59
Bile	3
<i>(d) Cerebro-spinal Fluid—</i>	
Various examinations	313
<i>(e) Miscellaneous Examinations—</i>	
Renal calculus	1
Body fluids	9
Human milk	2
<i>(f) Physiological Efficiency Tests—</i>	
Urea concentration tests	9
Sugar tolerance curves	101
Faecal fat estimations	12
Fractional test meals	155
Single gastric specimens	2
Basal metabolic rate estimations	39

During the year the preparation of metallic bismuth was maintained as far as supplies of the raw materials allowed and a total of 175,000 doses was sent to Medical Stores for distribution throughout the country. Solutions for intravenous injection continued to be prepared and of 810 litres of glucose saline 668 went to civil and 142 to military hospitals. Smaller amounts of other solutions issued were 45 litres of glucose and 35 litres of sodium sulphate. Towards the end of the year the amounts of these had to be restricted because of the lack of suitable containers.

2.—RESEARCH WORK

Early in the year a visit was paid by the Biochemist to the Northern Frontier District in order that some information might be acquired about the dietary habits of the population there. A number of body measurements were made on 332 inhabitants on the Tana River, at Wajir and at Moyale. A number of specimens of foodstuffs was also collected for analysis.

With the assistance of the Social Welfare Adviser in procuring the specimens, eight samples of salt licks from the Nyeri district of the Central Province and one from near Voi were analysed.

C.—Section of Pathology

1.—POST MORTEM EXAMINATIONS

Post mortem findings were as follows:—

Abscess lung	6
Anæmia aplastic	1
Aneurysm (ruptured)	6
Appendicitis (ruptured)	1
Athsma and myocardial failure	1
Avitaminosis	3
Cerebral hæmorrhage	1
Cerebro-spinal-meningitis	5
Chronic diffuse glomerulo-nephritis	2
Cirrhosis of liver	3
Coronary thrombosis	2
Dysentery bacillary	5
Eclampsia	1
Encephalitis	3
Endocarditis	3
Gastric ulcer (perforated 1, hæmorrhage 1)	2
Gastro-enteritis	5
Hæmorrhage following operation	1
Infective hepatitis	1
Intestinal obstruction	3
Kala Azar	1
Lateral sinus thrombosis	2
Malaria	2
Myocarditis (syphilitic)	5
Pneumonia, broncho-	19
Pneumonia, lobar	28
Poisoning	5
Pulmonary embolism	1
Pyonephrosis	3
Pyosalpingitis and peritonitis	2
Septicæmia	17
Tetanus	1
Tuberculosis	24
Tumours (carcinoma 3, sarcoma 4, cyst of choroid plexus 1, eosinophil tumour of pituitary 1)	9
Violence	77
Total ..	251

2.—HISTOLOGICAL EXAMINATIONS

Eight hundred and thirty-six specimens or sets of specimens were received and were reported on as follows:—

New Growths—Malignant:—

Carcinoma—

	<i>European</i>	<i>Asian</i>	<i>African</i>
of breast	6	1	9
of breast, recurrent	1		
of bladder			1
of bladder with schistosomiasis			2
of gall-bladder			1
of kidney	1		
of liver—			
bile-duct carcinoma			3
liver cell			2
secondary (primary undetermined)			1
of lung		1	2
of ovary—			
adenocarcinoma	1		2
granulosa cell			1
of pancreas			1
of rectum	1		
of submaxillary salivary gland—cylindroma			1
of stomach	3		1
of testis—seminoma	1		
of thyroid (secondary from)			1
of uterus—			
adenocarcinoma of endometrium	2		3
chorionic	1		1
metastatic in abdomen—primary undetermined	3	1	6

								European	Asian	African
Epithelioma—										
of buccal mucosa	..	..	..	..	..	..	..			1
of cervix uteri	..	..	..	..	..	..	..			6
of eye	..	..	..	..	..	..	..			4
of hand	..	..	..	..	..	..	..	1		
of leg	..	..	..	..	..	..	..			20
of lip	..	..	..	..	..	..	..			1
of penis	..	..	..	..	..	..	..			2
of skin elsewhere	..	..	..	..	..	..	..	2		7
of maxillary antrum	..	..	..	..	..	..	..			1
of œsophagus	..	..	..	..	..	..	..			1
metastatic—source not stated or unknown	..	..	..	..	..	..	..			3
Rodent ulcer	..	..	..	..	..	..	..	2		1
Endothelioma—										
of lymph-nodes	..	..	..	..	..	..	..	1		4
of buccal mucosa	..	..	..	..	..	..	..	1		
of knee-joint	..	..	..	..	..	..	..			1
of ovary	..	..	..	..	..	..	..	1		
Fibroma, recurrent	..	..	..	..	..	..	..			1
Glioma	..	..	..	..	..	..	..			1
Hypernephroma	..	..	..	..	..	..	..			1
Lymphosarcoma	..	..	..	..	..	..	..			9
Melanoma—										
of skin	..	..	..	..	..	..	..			11
of eye	..	..	..	..	..	..	..			3
metastatic—source not stated or unknown	..	..	..	..	..	..	..			3
Mixed salivary gland tumour	..	..	..	..	..	..	..			5
Neuroblastoma of adrenal	..	..	..	..	..	..	..			1
Osteoclastoma	..	..	..	..	..	..	..			7
Sarcoma—										
of soft tissues	..	..	..	..	..	..	..	2		34
of bone	..	..	..	..	..	..	..			4
Teratoma (abdominal)	..	..	..	..	..	..	..			1
								—	—	—
								30	3	172
								—	—	—
<i>New Growths—Benign:—</i>										
Adamantinoma of mandible	..	..	..	..	..	..	..			1
Adenoma—										
of breast (fibroadenoma)	..	..	..	..	..	..	..	2		4
of endometrium (uterine polyp)	..	..	..	..	..	..	..	5	1	5
of ovary (cystadenoma)	..	..	..	..	..	..	..			1
of salivary gland	..	..	..	..	..	..	..			1
of thyroid	..	..	..	..	..	..	..	3		4
heterotopic pancreatic (carcinoid embryonal tumour)	..	..	..	..	..	..	..	1		
Chondroma	..	..	..	..	..	..	..			1
Fibroma—										
of conjunctiva	..	..	..	..	..	..	..			2
of gum	..	..	..	..	..	..	..			2
of spleen	..	..	..	..	..	..	..			1
of stomach	..	..	..	..	..	..	..	1		
of vulva	..	..	..	..	..	..	..			1
neurofibroma	..	..	..	..	..	..	..			7
Fibromyoma of uterus	..	..	..	..	..	..	..	1	1	5
Hæmangioma	..	..	..	..	..	..	..	2	1	3
Lipoma	..	..	..	..	..	..	..	1		7
Lymphangioma	..	..	..	..	..	..	..			2
Myxoma (site not given)	..	..	..	..	..	..	..			1
Nævus	..	..	..	..	..	..	..	1		1
Papilloma—										
of mucous membranes	..	..	..	..	..	..	..	2		2
of skin	..	..	..	..	..	..	..		1	4
Teratoma (ovarian dermoid)	..	..	..	..	..	..	..			1
								—	—	—
								19	4	56
								—	—	—
<i>Specific Infections—Bacterial:—</i>										
Leprosy	..	..	..	..	..	..	..		1	5
Pneumonia	..	..	..	..	..	..	..			1
Syphilis—										
primary	..	..	..	..	..	..	..			2
tertiary (gumma)	..	..	..	..	..	..	..			5

									European	Asian	African
Tuberculosis—											
generalized .. .. .	..	..	..	..	..	..	..	..			9
of brain (tuberculoma)	..	..	..	..	..	..	..	..			5
of skin .. .. .	..	..	..	..	..	..	..	..			2
pulmonary .. .. .	..	..	..	..	..	..	..	..			1
Tuberculous—											
arthritis of ankle .. .. .	..	..	..	..	..	..	..	..			1
arthritis of elbow .. .. .	..	..	..	..	..	..	..	..			1
arthritis of knee .. .. .	..	..	..	..	..	..	..	..			4
endometritis .. .. .	..	..	..	..	..	..	..	..			1
epididymitis .. .. .	..	..	..	..	..	..	..	..			3
lymphadenitis .. .. .	..	..	..	..	..	..	..	..			32
meningitis .. .. .	..	..	..	..	..	..	..	..			2
peritonitis .. .. .	..	..	..	..	..	..	..	..			5
salpingitis .. .. .	..	..	..	..	..	..	..	..			2
tenosynovitis of wrist .. .. .	..	..	..	..	..	..	..	..			1
Typhoid .. .. .	..	..	..	..	..	..	..	..	1		4
Protozoal— .. .. .	..	..	..	..	..	..	..	..
Amœbic abscess of liver .. .. .	..	..	..	..	..	..	..	..			2
Amœbiasis of rectum .. .. .	..	..	..	..	..	..	..	..			1
Kala Azar .. .. .	..	..	..	..	..	..	..	..			1
Malaria .. .. .	..	..	..	..	..	..	..	..			1
Bilharzia—											
of appendix .. .. .	..	..	..	..	..	..	..	..			1
of bladder .. .. .	..	..	..	..	..	..	..	..			1
Filariasis of spermatic cord .. .. .	..	..	..	..	..	..	..	..			1
Onchocerciasis .. .. .	..	..	..	..	..	..	..	..			2
Epidemic thrombo-phlebitis .. .. .	..	..	..	..	..	..	..	..			1
Lymphogranuloma inguinale .. .. .	..	..	..	..	..	..	..	..			3
									—	—	—
									1	1	100
<i>Gynæcological Conditions Not Listed Above:—</i>									—	—	—
Cervical erosion .. .. .	..	..	..	..	..	..	..	..	3		2
Endometrial glandular hypertrophy .. .. .	..	..	..	..	..	..	..	..	6	1	11
Endometrioma of pelvis .. .. .	..	..	..	..	..	..	..	..	1		1
Endometritis—											
acute pyogenic .. .. .	..	..	..	..	..	..	..	..	1		3
chronic .. .. .	..	..	..	..	..	..	..	..			1
Ovarian cyst—											
follicular .. .. .	..	..	..	..	..	..	..	..	2	1	7
lutein .. .. .	..	..	..	..	..	..	..	..			1
Retained products of conception .. .. .	..	..	..	..	..	..	..	..	8	1	9
Salpingitis—pyogenic .. .. .	..	..	..	..	..	..	..	..			5
									—	—	—
									21	3	40
<i>Non-specific Inflammatory Conditions:—</i>									—	—	—
Arthritis—chronic .. .. .	..	..	..	..	..	..	..	..			1
Appendicitis—acute .. .. .	..	..	..	..	..	..	..	..			1
Broncho-pneumonia .. .. .	..	..	..	..	..	..	..	..			3
Cerebral abscess .. .. .	..	..	..	..	..	..	..	..		1	
Cholecystitis .. .. .	..	..	..	..	..	..	..	..			1
Enteritis—acute .. .. .	..	..	..	..	..	..	..	..			1
Epididymitis .. .. .	..	..	..	..	..	..	..	..	1		
Keloid .. .. .	..	..	..	..	..	..	..	..			1
Lymphadenitis .. .. .	..	..	..	..	..	..	..	..			13
Mastitis—											
acute .. .. .	..	..	..	..	..	..	..	..	1		
chronic .. .. .	..	..	..	..	..	..	..	..	6		2
Osteitis .. .. .	..	..	..	..	..	..	..	..		1	4
Pericarditis—chronic obliterative .. .. .	..	..	..	..	..	..	..	..			1
Periostitis .. .. .	..	..	..	..	..	..	..	..			2
Peritonitis .. .. .	..	..	..	..	..	..	..	..			2
Pyogenic granuloma .. .. .	..	..	..	..	..	..	..	..			4
Regional ileitis .. .. .	..	..	..	..	..	..	..	..			1
Tonsillitis—											
acute .. .. .	..	..	..	..	..	..	..	..	1		
chronic .. .. .	..	..	..	..	..	..	..	..	1		
Ulcer—											
of leg .. .. .	..	..	..	..	..	..	..	..			10
of tongue .. .. .	..	..	..	..	..	..	..	..	1		
									—	—	—
									11	2	47
									—	—	—

Other Conditions:—

Acute yellow atrophy	5
Amyloid disease	1
Arsenical dermatitis	1
Branchial cyst	1
Bursitis—chronic prepatellar	1
Cirrhosis of liver—	
monolobular	2
multilobular	6
Colloid goitre	1
Congenital cystic kidney	1
Congenital deformity of legs	1
Duodenal diverticulitis	1
Endarteritis obliterans	1
Hæmorrhoids	1
Hermaphroditism	1
Hodgkins disease	8
Infective hepatitis	1
Kaposi's hæmorrhagic sarcoid	3
Leukæmia—	
aleukæmic myeloid	1
lymphatic	1
Lichen planus	1
Mesenteric cyst	1
Nephritis	6
Osteitis fibrosa	2
Prostatic hypertrophy	4
Seborrhœa	1
Toxic goitre	1
	—
	8
	—

Specimens on which no precise diagnosis was possible, e.g. tissues sent to exclude a specific condition which was not found and those showing only indefinite abnormalities ..	19	5	145
Normal tissues	5	4	28
Not diagnosed	2		17
Unfit for examination	1		24
	—	—	—
	27	9	214
	—	—	—
Totals ..	117	22	678
All races		817	
Various animal tissues		19	
		—	
Grand Total ..		836	

3.—KAHN TESTS

19,121 specimens were received and gave the following results:—

	Positive	Negative	Doubtful	Broken in transit, hæmolysed, con- taminated or otherwise unfit for test
Sera	5,182	12,341	849	502
Cerebro-spinal fluids	6	227	4	10

4.—MISCELLANEOUS EXAMINATIONS

Friedman tests	107
Blood group determinations	246
Blood sedimentation rates	348
Others	22

D.—Calf Lymph Section

During the year 1946 the demand for vaccine lymph decreased somewhat and the opportunity was taken of building up a reserve stock of over five million doses.

Towards the end of the year a certain amount of difficulty was experienced when the Veterinary Department reported the presence of pleuro-pneumonia amongst some of the calves, and as it was feared that the African owners might object to supplying in future, arrangements have now been made with the Director of Veterinary Services to supply calves weekly for the preparation of vaccine lymph.

Total number of calves received	...	...	...	...	1,079
From which lymph collected	...	...	...	...	1,020
Rejected, failed and died	...	...	...	...	59
Total number of grammes of pulp collected	...	...	...	...	18,797.6
Average yield per calf in grammes	...	...	...	...	18.43
Total number of doses—					
Prepared for issue	...	...	...	...	6,033,625
Discarded (contaminated, etc.)	...	...	...	...	545,535
Balance 31-12-45	...	...	...	...	3,764,000
Issued to—					
Kenya	...	...	...	...	2,458,647
Uganda	...	...	...	...	1,460,000
Tanganyika	...	...	...	...	25,000
Zanzibar	...	...	...	...	17,000
Seychelles	...	...	...	...	62,000
Military (E.A. Command)	...	...	...	...	130,500
Northern Rhodesia	...	...	...	...	46,500
Total issues, 1946					4,199,647
Balance 31-12-46					5,579,978

E.—Section of Bacteriology

1.—ROUTINE SPECIMENS

Sixteen thousand, one hundred and thirty-nine specimens were received for examination, of which 3,230 included investigation by culture.

Among the results obtained were:—

Myco. tuberculosis was present in 451 samples of sputum.

Bact. typhosum was recovered from 55 blood cultures and from 48 stool cultures.

Bact. paratyphosum C was recovered from a blood culture.

Salmonella montevideo, a member of the paratyphoid C group, was isolated by an associate worker from a blood culture as well as post mortem from an African patient. This is of interest as it is the first time this organism has been reported in East Africa. The identification was made at the Central Public Health Laboratory, London, by Dr. J. Taylor, who reports that it appeared in England for the first time during the late war.

Brucella abortus and *Br. melitensis* were isolated from fifteen blood cultures.

Bacteria found in specimens of cerebro-spinal fluid gave the rather unusual distribution of: meningococci, 26 cases; pneumococci, 36 cases; *H. influenzae*, 13 cases.

From throat swabs, *C. diphtheriae* was recovered in 59 cases and Vincent's organisms in 136 cases.

2.—SEROLOGY

Two thousand four hundred and fifteen samples of serum were sent in for agglutination tests. Our suspensions of the *Salmonella* bacteria and of *Brucella* were made up by ourselves and standardized against Oxford Standards Laboratory suspensions. *Proteus* suspensions for the Weil-Felix have been imported from England and India.

3.—WATER AND FOOD ANALYSES

Fifty-eight samples of water and 67 samples of milk and other foods were examined.

4.—ANTISERUM

All but the anti-typhoid serum were obtained from the South African Institute for Medical Research.

	No. of Ampoules
Anti-anthrax (25 c.c.)	7
Diphtheria anti-toxin (2,000 units)	115
Diphtheria anti-toxin (16,000 units)	245
Diphtheria prophylactic (courses)	395
Anti-dysentery (20,000 units)	53
Anti-gangrene (25 c.c.)	33
Tetanus anti-toxin (3,000 units)	977
Tetanus anti-toxin (20,000 units)	886
Anti-venene (10 c.c.)	134
Anti-typhoid (20 c.c.)	172

5.—VACCINES

(a) Autogenous Vaccines: 43 courses prepared.

(b) Stock Vaccines:—

	Quantity prepared	Sold to other territories	Total issues
	ml.	ml.	ml.
*Alcoholized T.A.B. vaccine	70,000	29,000	58,390
Plague vaccine	150,000	5,900	78,385
Rabies vaccine	27,360	3,960	31,260

*In this form of the vaccine the dose is half that of the older form, so that as regards dosage these issues are equivalent to twice this amount of the older formalinized vaccine.

Issues of Polyvalent Staphylococcus, Polyvalent Staphylococcus and Streptococcus, Polyvalent anti-cartarrhal, Brucella abortus, H. pertussis and mixed Gonococcal vaccines amounted to 250 courses.

6.—OTHER PRODUCTS

Large quantities of distilled water and sterile saline were issued to practitioners and hospitals. 1 per cent planocaine was put up in rubber-capped bottles for use with penicillin.

Extracts of various substances ranging from milk and wool to flower and grass pollens were prepared and issued for use in desensitization therapy. A number of cultures of Lactobacillus acidophilus were supplied.

7.—PENICILLIN

As supplies of penicillin were not freely available in this country during 1946, this section was allotted the task of its storage and distribution.

During the year we received, through the Crown Agents for the Colonies, 2,669.4 mega-units and issued 2,658 mega-units.

A number of assays of the potency of various samples sent in to us from very varied sources has shown a remarkable degree of stability of the product as packed in sealed bottles in the dry powder form of the sodium salt.

8.—INVESTIGATIONS

(a) Trials were carried out by one of the pathologists to test methods for a single injection of penicillin that would enable an adequate concentration of the drug to be maintained in the blood over a relatively prolonged period of time. These tests were carried out with the generous co-operation of the officers in charge of No. 87 General Hospital and its V.D. Department as well as that of the Medical Officer and Superintendent in Charge of the Infectious Diseases Hospital. In brief, it was found that the subcutaneous injection of 150,000 units mixed with patient's blood produced an adequate concentration of penicillin in the blood stream over a period of 10 to 12 hours when the atmospheric temperature was between 60°F. and 70°F. This single injection was found to be as effective a cure for acute gonorrhœa as the usual course of four or five separate injections using the same total dosage.

The reports of these trials were recorded in the East African Medical Journals for May and June, 1946.

Visits were made by the Pathologist to Nakuru, Kiambu, Machakos, Fort Hall, Nyeri, Kerugoya, Nanyuki and Meru, where this technique was introduced at hospitals and V.D. clinics with successful results.

(b) A small outbreak of scarlet fever in Nairobi was reported by Dr. A. McK. Fleming, Medical Officer in Charge of Schools, in the East African Medical Journal for November. The streptococci isolated from throat swabs were found to belong to Lancefield's Group A, thus conforming to the recognized etiology.

(c) An inquiry into the ecology of diarrhoea and dysentery occurring at an hotel in the Colony was started in August. This is a subject of considerable importance to hotelkeepers in a country where tourist traffic is considerable. The Senior Parasitologist generally assisted preliminary work with the loan of his mobile laboratory and an African assistant to trap flies. Dr. J. W. Macmillan, a local practitioner, gave a great deal of his time in making preliminary cultures and sending them in to Nairobi. Over 120 cultures from foodstuffs and batches of flies were examined. Unfortunately, from the point of view of the research, the outbreak of cases had subsided and it was not possible to complete the work. However, the examinations that were done yielded suggestive results and it is hoped to finish the work when an opportunity occurs.

There are two features of work in this section which may be mentioned. The first is the need for provision of facilities for what may be termed "public health" bacteriology. As reported above, examination of water supplies and food products amounted to 125 samples only during 1946, which is rather above the average number examined during the last ten years. In view of the development of public health activities, hygiene, industries, etc., in the Colony, we should have facilities for the examination of 1,000 samples a year at least. Consequently, an extra laboratory room, equipment and personnel capable of undertaking this very responsible task are needed. The other feature is the lack of a suitable animal house in which to breed and keep experimental animals. This need, however, it is expected will be provided in 1947.

Annual Report of the Working of the Laboratory Attached to the Native Civil Hospital Mombasa, for the Year 1946

1.—FEES

A sum of Sh. 10,520 was charged to private practitioners in respect of laboratory examinations carried out—an increase in revenue of Sh. 2,925 over the previous year.

2.—EXAMINATIONS

A total of 53,848 specimens were examined, an increase of 7,702 over the figures for 1945. The increase was most marked in the latter part of the year, due to the abnormally heavy incidence of malaria. It is to be pointed out that there has been a marked increase in the number of blood counts and similar work carried out which require a fair amount of skilled time spent thereon. In addition, specimens which were previously sent to Nairobi for examination are now dealt with on the spot.

3.—GENERAL

Supplies of equipment and chemicals ordered through the Crown Agents have been coming forward very satisfactorily, but it has been found very difficult to estimate the needs of the Laboratory for eighteen months to two years in advance of the date of indenting, with the result that deficiencies of some articles were experienced. As laboratory and hospital equipment appear to be in easy supply, the laboratory should prepare to issue proper receptacles for the submission of samples in place of old cigarette tins, assorted open bottles and other insanitary makeshifts which have been resorted to during the war and the years of economy preceding it. This item will be rather costly, as even with the few containers that have been available it is most difficult to account for their eventual complete disappearance as this does not appear to be due to breakage.

Included in the following analysis of the work carried out are the figures for 1945 as a comparison and, further, figures for the work sent in by private practitioners:—

ANALYSIS OF EXAMINATIONS

Blood:—	1946	1945
Films for malarial parasites, etc.	19,043	20,302
Films for differential count	337	210
Total white cell and differential counts	307	232
Total red cell and hæmoglobin counts	52	170
Total red, white, hæmoglobin and differential counts	345	165
Hæmoglobin	310	355

Blood sedimentation rate	..	..	..	..	..	20	..	9
Blood groups	..	..	..	..	..	12	..	6
Blood culture	..	..	..	..	..	10	..	3
Widal tests	..	..	..	..	..	288	..	235
Weil Felix tests	..	..	..	..	..	3	..	92
Glucose tolerance curves	..	..	..	..	..	27	..	19
Blood sugar estimation—single specimen	..	..	..	..	..	7	..	11
Miscellaneous	..	..	..	..	..	—	..	2
Kahn tests	..	..	..	..	..	2,995	..	2,215*
Urea estimation	..	..	..	..	..	115	..	20*
Van den Berg test	..	..	..	..	..	6	..	—
Ide test	..	..	..	..	..	14	..	—
<i>Faecal Examinations:—</i>								
Ova, cysts, etc.	..	..	..	..	..	10,580	..	9,500
Culture	..	..	..	..	..	38	..	17
Occult blood	..	..	..	..	..	10	..	16
<i>Urine Examinations:—</i>								
Routine	..	..	..	..	..	8,764	..	7,955
Culture	..	..	..	..	..	27	..	22
Sugar	..	..	..	..	..	11	..	6
Acetone, bile, etc. (included in routine)	..	..	..	..	..	—	..	33
Sputa for T.B., etc.	..	..	..	..	..	5,259	..	1,723
Urethral, vaginal, cervical smears, etc., for N. gonorrhœa	..	..	..	..	..	3,135	..	3,016
Miscellaneous smears, fluids, etc.	..	..	..	..	..	97	..	96
<i>Cerebro-spinal Fluid:—</i>								
Cell counts	..	..	..	..	..	10	..	8
Organisms	..	..	..	..	..	42	..	30
Kahn test	..	..	..	..	..	5	..	—
<i>Cultures—Various:—</i>								
Throat swabs for K.L.B.	..	..	..	..	..	188	..	58
Water samples for bacteriological examination	..	..	..	..	..	13	..	1
Spleen smears (rat) for B. pestis	..	..	..	..	..	1,643	..	2,278
Tissues for histological examination (Nairobi)	..	..	..	..	..	45	..	10
Fractional test meals	..	..	..	..	..	3	..	?
Dark ground examinations	..	..	..	..	..	4	..	—

* Sent to Nairobi.

SPECIMENS FROM PRIVATE SOURCES, 1946

					<i>Chargeable</i>		<i>Non-chargeable</i>	
					1945	1946	1946	
Differential count	..	..	..	..	144	213	..	53
Total count	..	..	..	..	41	55	..	28
White count	..	..	..	..	8	14	..	9
Hæmoglobin	..	..	..	..	1	1	..	—
Kahn test	..	..	..	..	3	90	..	107
Glucose tolerance curves	..	..	..	..	4	6	..	2
Blood sugar %	..	..	..	..	—	2	..	5
Blood urea	..	..	..	..	—	3	..	1
Blood Ide test	..	..	..	..	—	2	..	—
Blood culture	..	..	..	..	—	1	..	—
Blood sedimentation rate	..	..	..	..	—	2	..	—
Widal test	..	..	..	..	—	—	..	62
Weil Felix test	..	..	..	..	—	—	..	1
Red count and hæmoglobin	..	..	..	..	—	—	..	—
Blood parasites	..	..	..	..	—	—	..	4,391
Stools, ova and cysts	..	..	..	..	533	713	..	167
Stools, occult blood	..	..	..	..	8	7	..	—
Stools, culture	..	..	..	..	4	1	..	3
Urine, routine	..	..	..	..	464	507	..	131
Stools, Tb.	..	..	..	..	2	—	..	—
Urine culture	..	..	..	..	16	12	..	—
Urine sugar	..	..	..	..	8	16	..	1
Sputum organisms	..	..	..	..	2	—	..	—
Urea clearance tests	..	..	..	..	—	—	..	2
Throat swabs	..	..	..	..	—	15	..	57
Smears, fluids, etc.	..	..	..	..	100	93	..	94
C.S.F. cells	..	..	..	..	—	1	..	—
C.S.F. organisms	..	..	..	..	—	1	..	2
Sputum, Tb.	..	..	..	..	—	—	..	262
Dark ground examinations	..	..	..	..	—	—	..	2
Blood, Van den Berg test	..	..	..	..	—	—	..	—

Total specimens from private sources in 1946: 7,138.

DIVISION OF INSECT-BORNE DISEASES

ANNUAL REPORT FOR 1946

This Division got fully under way for the first time in 1946. The staff was not fully up to the recommended strength, particularly on the anti-malarial engineering side and the activities in this direction were unfortunately curtailed. However, in several important respects, considerable progress has been made. Work has followed the lines suggested in the schedules attached to the post-war development report, though naturally only a small number of the projects were implemented during the year.

The staff is based on the Medical Research Laboratory, Nairobi, where it occupies a series of main rooms and laboratories, an insectory, some temporary out-buildings and a few additional small rooms. Although the main laboratory accommodation is adequate, there is urgent need for proper animal houses, stores and garages for government vans, lorries and mobile laboratory. The last was purchased from the military during the year and has proved of immense value in the investigation of epidemics.

Satellite laboratories exist at Mombasa (at the Port Health Office) and at Kisumu (Entomological Laboratory), where European members of the staff are permanently stationed. African Entomological Laboratory Assistants are stationed at Malindi, Fort Hall, Nyeri, Isiolo, Narok and Kakamega.

In addition to the above, there are temporary stations at Kericho, Gede, Langata and Taveta in connexion with special schemes.

Activities are conveniently divided into three branches:—

1. Routine.
2. Investigation and control of outbreaks of insect-borne diseases.
3. Research.

ROUTINE DUTIES

Routine duties include the identification of arthropods of medical importance, examination of blood slides taken in malaria surveys, *Aedes* control throughout the Colony, and training of staff.

Identifications.—This section is largely under the direction of the Systematist, though much of the Coast and Nyanza material is examined at Mombasa and Kisumu respectively. Appendix II summarizes the results. During the course of this work, which forms the basis of the whole structure, a number of new species of mosquitoes were discovered or described during the year. They include the following:—

New Species Described.

- A. (A) fuscicolor.*
- M. nairobiensis.*
- M. kaimosi.*
- Ae. (S) keniensis.*
- Ae. (S) langata.*
- Ae. (A) pseudotarsalis.*
- A. (D) michaelikati.*
- A. (D) michaelikati gurneri.*
- E. hightoni* (in press).
- C. (N) stellatus.*

Description of unknown larva (l.), pupa (p.) and male or female of named species.

- Aedes (S) deboeri* 1. p.
- Aedes (A) capensis* 1.
- Aedes (A) kapretwae* 1.
- M. brevipalpis* 1.
- M. barbipes* 1. p.
- M. iutescens.*
- Aedes (F) embuensis* 1. p.
- Aedes (D) albomarginatus*
- Aedes (S) soleatus* p. (in press) 1. ditto (Hopkins).
- U. pandani* 1. in press (Hopkins).

New species not yet described.

- 4 *Eretmapodites* from Bwamba.
- 2 *Ficalbia* from Bwamba.

- 1 *Aedimorphus* from Bwamba.
- 1 *Megarhinus* from Ruwenzori.
- 2 *Aedimorphus* from Nairobi.

Material was also sent to this Division from neighbouring territories for opinion.

Blood Slides.—Four African assistants are in course of training for the examination of blood slides, but as such training takes at least a year, this staff was not fully available during 1946. One hundred and seventy-five slides of Indian schoolchildren from Kitale were examined and showed the low rate of 0.6 per cent positive for malarial parasites.

The examination of slides taken by medical officers in the course of malarial surveys will be willingly undertaken in 1947.

A new rapid Romanowsky stain has been used successfully this year. It is the "J.S.B. Stain" and takes less than two minutes. It is superior to Field's Stain and equal to Giemsa in most respects. Malarial parasites in thick and thin films, sporozoites, trypanosomes, leishmania, spirochaetes and other blood protozoa stain well by this method. It is successful also for sections using the Maximow technique. Full details and supplies are available for medical officers who would like a rapid and reliable method for personal use.

Investigation of Epidemics

Several requests for help were made during the course of 1946 in regard to outbreaks of disease. They included the following:—

1. Relapsing fever epidemic on Coast.
2. Relapsing fever in Meru District.
3. Schistosomiasis at Eldoret, Limuru and Fort Hall
4. Malaria in Nanyuki.
5. Malaria epidemics in Kisii and Sotik.
6. Leishmaniasis in Ukamba.
7. Multiceps infection at Fort Hall.
8. Trypanosomiasis in Masai.
9. Suspected yellow fever at Makueni.

The limited staff of this Division was unable to cope with all these problems and the less urgent have had to be postponed until 1947. They are now briefly described below:—
Epidemic of Louse-borne Relapsing Fever in the Giriama and Digo Reserves.

The Annual Report for 1945 describes the start of this epidemic, which continued into January, 1946. Altogether, 1,550 persons were affected and approximately 380 died. This was the first epidemic of louse-borne relapsing fever known to have occurred in East Africa. The disease was introduced from Arabia by dhows via Mombasa in spite of the stringent precautions taken by the port authorities.

The epidemic was brought rapidly and completely under control by dusting the clothes and bodies of all natives in the reserve with a powder of D.D.T. (5 per cent) in kaolin. The kaolin was a local Kenya product. The powder acted by killing the lice present in the clothing. They were most numerous in the curious frilled skirts called marindas worn by the women and these were given special attention. It is probable that the above method, which represents the first occasion on which D.D.T. has been used to control an epidemic of relapsing fever on a large scale, averted a most serious situation in Kenya Colony. The preventive measures were conducted by members of this Division in conjunction with medical and health staff of the Department.

Relapsing Fever at Meru.

This district has suffered a greatly increased incidence of the disease during 1946, which is presumably of the tick-borne variety; 230 cases were notified. The situation will be examined early in 1947.

Schistosomiasis.

During the course of the year, five snail surveys were carried out, three in the Kitale-Eldoret district, one in Fort Hall district and one in the Limuru district. All were done in European settled areas at the request of the various health authorities.

Very many snail hosts (*B. pfeifferi*, *P. globosa* and *B. tropicus*) were found on the Samar Estate, near Fort Hall, though none were found to be infected with human schistosomiasis.

Regarding the Kitale-Eldoret area, one farm was found to be moderately infested with *B. pfeifferi* and *P. globosa*, whilst another two farms were free from host snails, although a number of harmless species were found. All the host snails collected on the first-mentioned farm were free from infection.

No snails were found during the course of the survey carried out in the Limuru district.

On the Tanganyika border, near Taveta, at a village where the disease is very common, *Bifid cercariae* were isolated from *B. pfeifferi*.

Malaria in Nanyuki.

Infection in this locality has been reported for the last two years and a number of cases of *P. falciparum* malaria have occurred. Unfortunately, other commitments during the season prevented any investigations being made here.

Malaria Epidemics in Kisii and Sotik.

These outbreaks formed part of the widespread annual epidemic affecting the western highlands of Kenya. The following figures indicate how severe the disease has become in Kisii:—

1938	...	169 cases	1943	...	1,966 cases
1939	...	560 cases	1944	...	3,486 cases
1940	...	1,895 cases	1945	...	4,309 cases
1941	...	780 cases	1946	...	7,120 cases
1942	...	1,836 cases			

The position is much the same elsewhere in this part of Kenya and little can be done until a satisfactory method of rural control has been devised (*vide* below under Research). The epidemics were investigated by Entomological Field Officers of the Division.

Leishmaniasis in Ukambani.

For several years, a few cases of this disease have been reported in various localities in the Machakos-Kitui area, and although kala azar does not appear to be a major problem at present, its presence in the heart of the Colony suggests the need for early investigation. So far this has been impossible to arrange.

Multiceps Infection at Fort Hall.

The Medical Officer excised tumours from the lumbar region of two children admitted to Fort Hall Hospital. Examination revealed that they consisted of the coenurus of the rare tapeworm *Multiceps serialis*, only two cases of which have previously been reported in man. It was discovered that both the children came from Kanyanyeni, 20 miles from Fort Hall, and arrangements have been made with the Veterinary Research Laboratory to conduct a joint inquiry in the locality.

Trypanosomiasis in Masai.

A single case of sleeping sickness was reported late in December, in an inhabitant of the hitherto uninfected Narok district of Masai. *G. swynnertoni* is known to exist there in large numbers and the position gives rise to some anxiety, particularly as the investigations which are now in progress show that the infection is *rhodesiense*.

Suspected Yellow Fever at Makueni.

An African employee of the Veterinary Department died in Machakos Hospital with symptoms of yellow fever. Liver sections were reported by the Yellow Fever Research Institute, Entebbe, as being highly suspicious (though later a negative diagnosis was made), and in consequence a safari was made to Makueni, where the man had become ill. The mosquito survey revealed nothing of interest, blood samples were taken of the inhabitants, and although three were reported by Entebbe as showing protection, it was later found that these three people had been vaccinated previously. Blood was also taken from ten monkeys (*Cercopithecus aethiops johnstoni*) which again gave negative results. The evidence thus suggests that the case was that of some other disease.

Research

No attempt is being made in this report to classify work into pure and applied research. The latter is the primary function of this Division, but inevitably a certain amount of pure research must be carried out.

RELAPSING FEVER

Late in 1945, the louse was incriminated as the vector of the Coast epidemic; this year, the details of transmission by this insect were thoroughly investigated. A well-marked negative phase, lasting till the 16th day, was established and that this also occurred in nature was strongly suggested by the failure to find spirochaetes in lice collected from patients and examined immediately. This indicates that the Kenya (or Arabian) form of the disease is related to the European rather than to the Chinese or Abyssinian, where a negative phase is absent.

Clean lice were also found to be able to transmit the indigenous tick-borne spirochæte of this country—*S. duttoni*—and this observation forms an important link in the evidence for the hypothesis that *S. duttoni* was the original spirochæte of relapsing fever, which later became transmissible by lice. It is an experiment which hitherto had been negative in the hands of many observers. Transmission through four successive batches of lice was effected with no apparent change in the nature of the spirochæte.

Later in the year, work was done on *S. duttoni*. Strains of this species have been recovered from the blood and spleen of Kenya cases of the disease, from *Ornithodoros moubata* and *savignyi* from infected localities in Somalia and from *O. moubata* in this country. Hereditary transmission via the egg was repeatedly observed and serial sections of infected nymphs of the second generation have been cut to study the localization of the spirochæte. Most of these strains were found by cross immunity experiments to be antigenetically distinct, in contrast to the louse-borne spirochætes of the epidemic, which showed cross immunity in different cases of the disease.

A new blood spirochæte—which has been called *S. harveyi*—was discovered in a wild monkey (*Cercopithecus æthiops*) from the Mau. It was non-pathogenic to man, rabbits or guinea-pigs, but gave rise to persistent infections in monkeys, rats and mice. Transmission experiments with various arthropods were negative. The strain is being maintained in mice.

Over 1,000 experimental animals have been used to observe the behaviour of the various spirochætes mentioned above, and it was found that they fell into three categories as follows:—

S. recurrentis (louse-borne). Produces a mild disease in monkeys and a short infection in mice. Human disease.

S. duttoni (tick-borne) Kenya and Somalia. Produces a fatal disease in most species of monkeys and a long infection in mice. Human disease.

S. harveyi sp. nov. Produces a mild disease in monkeys and a long infection in mice. Not a human disease.

An interesting feature of the disease in monkeys is the marked nuclear changes in the ganglion cells of the cerebellum, an observation first made by the Pathologist and not hitherto described. Neurotropism was observed in many *S. duttoni* infections.

Towards the end of the year, work was started on the epidemiology of tick-borne relapsing fever, with particular regard to the natural rodent hosts. In view of the importance of the disease in Kenya, it is most desirable that this work should be continued in 1947.

MALARIA

Two interesting field experiments have been carried out during the year in the Kericho district, an experiment on the control of rural highland malaria by the DDT impregnation of huts and a field trial of paludrine and mepacrine as prophylactics during a malaria epidemic.

D.D.T. Impregnation of Huts.—Rather more than 2,000 Kipsigis huts were sprayed with 5 per cent D.D.T. in power kerosene, on three successive occasions, at an estimated dosage of 200 mgms. per sq. ft. A severe epidemic of malaria swept the district, but the impregnated zone largely escaped. Parasite rates indicated that transmission in the latter area was at least halved. *A. gambiae* was found to be the vector, although it was limited to a short season from May to August. The infection rate was 1.4 per cent. Meteorological observations inside and outside huts indicated that it is only in the former that the temperature and humidity are suitable for the development of the malarial parasite in the mosquito.

Observations are being made on anopheline bionomics in contiguous areas (Chepalungu, Kisii Highlands, Londiani and Nandi), so that if the experiment is a success in Kericho data will be available for any further extension of the method.

This work is being undertaken with a grant from the Colonial Medical Research Committee and in conjunction with the Colonial Insecticidal Research Team.

Paludrine Prophylaxis.—A supply of the drug was sent by the Colonial Medical Research Committee and was used, at the rate of 0.1 gramme weekly, on a tea estate at Kericho and in the Kisumu Prison during the malaria season. About one person in five in the controls (on no drugs) contracted the disease during the epidemic and the parasite rate doubled itself. The latter rate in the paludrine group did not rise, but several people who had been taking the drug regularly became ill with malaria. A subsidiary group on mepacrine (0.1 gramme daily) was completely protected against infection. Tests were done on the

blood and urine of the people and these indicated that the drugs had been taken regularly. These results suggest that 0.1 gramme of paludrine once a week is insufficient for complete protection and confirm the efficacy of mepacrine in the dosage employed

Malaria Parasites in Animals.—The blood of various species of monkeys, of birds (*Ploceus reichenowi*) and of lizards (*Mabuia striata* and *maculiblabris*) was found to harbour species of *Plasmodium*. These parasites have been studied in special reference to the important subject of exoerythrocytic schizogony. The work is still in an incomplete stage, although the latter form of development has been observed in one of the two species of lizard malaria. Only one species has been found in monkeys and this exhibits various interesting but inexplicable features, e.g. the nature of schizogony. A few experiments in transmission of the parasites by *Aedes ægypti* mosquitoes were negative.

ONCHOCERCIASIS

A successful experiment in eliminating the vector (*Simulium neavei*) of this disease was completed during the year. The Koderia area in South Kavirondo was chosen and the infested rivers were treated with an emulsion of D.D.T. applied at the rate of five parts per million of water for 30 minutes. Applications at 10-14 days' intervals were made for three months. The flies disappeared after two months and have not re-appeared; It is presumed that the species has been completely eradicated and that reinfestation from elsewhere is improbable.

Systematic field tests have been made with gammexane on similar lines, and this insecticide is apparently lethal in as low a dilution as one part per million.

Further attempts to find the breeding places of *S. neavei* were again unsuccessful. An infested river in South Kavirondo was dammed and diverted and a search made of the dried river bed, but the immature stages of the insect remained undisclosed. Successful development of other *Simulium* species in an artificial waterfall (modified Gordon model) was obtained, but eggs from *S. neavei* failed to hatch when introduced into the apparatus.

YELLOW FEVER

Research on this disease was largely confined to observations on acrodendrophilic mosquitoes at Langata and Gede (in both of which places natural yellow fever immunity exists). At Gede, such mosquitoes were confined to the sub-genus *Diceromyia* (*taylori*, *furcifer* and particularly *adersi*). *A. (D) adersi* exhibited a well marked peak after the long rains, but was rare at other times of the year. The mosquitoes of the Langata Forest covered a large range and included a few *A. ægypti* in ground catches, where *A. dentatus*, *cumminsi*, *pseudotarsalis* and *C. salisburyensis*, *pipiens* and *trifilatus* were found to be the most numerous mosquitoes. On platforms, catches were divided into morning (7 a.m.—10 a.m.) and evening (5 p.m.—8 p.m.) periods. Numbers were scanty in the former; in the evening catches, *Aedes dendrophilus* (= *deboeri*) was the commonest mosquito and this species is apparently the most likely to be the vector of the sylvan disease, though nothing is known of its actual potentialities as a carrier.

It is obviously desirable to ascertain the limits of sylvan yellow fever in Kenya, and with this object in view monkeys from different localities are being trapped and bled and the sera is sent to Entebbe for testing. The following results were obtained during the year:—

Langata monkeys: 25 tested, all negative.

Makueni monkeys: 10 tested, all negative.

Kisii monkeys: 11 tested, all negative.

Taveta monkeys: 2 tested, all negative.

Kericho monkeys: 3 tested, all negative.

Gede monkeys: 6 tested, all negative.

Gede bush babies: 8 tested, 4 positive.

LEISHMANIASIS

With the collaboration of one of the pathologists, a culture of *Leishmania* was obtained from the spleen of a fatal case of the disease from Ukambani. It has been maintained in sub-culture and will be used for future studies.

FILARIASIS

A survey at Siyu on Patta Island (north of Lamu) showed a high incidence of elephantiasis. The night blood of 34 inhabitants gave a 24 per cent sheathed microfilaria rate and 11 per cent infection was found in *Culex fatigans* mosquitoes collected in the huts.

A series of tests on pyrethrum concentrates, manufactured and supplied by the E.A. Industrial Management Board, were carried out in a Potter-Hocking Chamber. *Aedes ægypti* mosquitoes from the laboratory colony were used. Complete mortality was achieved using a solution in kerosene of 0.083 per cent pyrethrins. The "standard international insecticide" is 0.1 per cent, suggesting that the Kenya product is 17 per cent better.

Two types of aerosol bomb were tested, the Bridgeport and the Freon. The former contains both D.D.T. and pyrethrum, but the residual effect of the D.D.T. after a week's interval was found to be negligible, and it is obvious that this type of bomb possesses only a restricted value. The Freon bomb was tested to see if the insecticide had deteriorated after storage for two years. The results indicated no falling off in potency.

Samples of Fumite D.D.T. generators were examined and laboratory trials indicated that although the smoke effected an immediate 100 per cent mortality, the residual action was slight. This result was confirmed in the field at the Division's malaria station at Taveta. The smoke poured through the thatch of the hut and much was obviously lost. For six weeks after ignition, mosquitoes were fewer (by approximately 50 per cent) in this hut as compared with the control, but as many as 73 were recovered in five weekly searches, suggesting that the method is not of much practical value.

All the above tests require a large supply of laboratory-bred insects and for this purpose *Aedes ægypti* and *Anopheles gambiae* colonies are maintained. Eggs for the latter are obtained from the Taveta station.

MEETINGS, ETC.

The first annual meeting of the Division was held at the Medical Research Laboratory from September 30th to October 4th. A series of papers were read and these are being published in a special number of the E.A. Medical Journal early in 1947. Laboratory demonstrations were held in the afternoons and visits to field experiments in the vicinity of Nairobi were arranged.

A relapsing fever exhibit was shown at the Annual Conversazione of the Kenya Natural History Society at the Coryndon Museum in September.

Special meetings of the Municipal Boards of Eldoret, Kisumu and Mombasa were attended to give advice on various problems relating to malaria.

PUBLICATIONS

The following articles were published by members of the staff during the year:—

P. C. C. Garnham, J. O. Harper and R. B. Highton.—"The Mosquitoes of the Kaimosi Forest, Kenya Colony, with special reference to Yellow Fever." *Bull. Ent. Res.* February, 1946.

P. C. C. Garnham.—"The Efficacy of Insecticidal Sprays in Aircraft." *E.A. Med. J.* September, 1946.

E. C. C. van Someren.—"Ethiopian Culicidæ Tribe—megarhini—Notes and Descriptions." *Trans. R. Ent. Soc.*, London, Vol 97, Part 7. 1946.

E. C. C. van Someren.—"Ethiopian Culicidæ: Notes and Descriptions of some New Species and Hitherto Unknown Larvæ and Pupæ." *Trans. R. Ent. Soc.*, London, Vol. 97, Part 7. 1946

E. C. C. van Someren.—"Ethiopian Culicidæ—Descriptions of the Adults and Pupæ of two New Species and two Sub-species of the Genus *Aedes* from East Africa (Diptera)." *Trans. R. Ent. Soc.* (B) 15 pts. 1-2. 1946.

Staff

Senior Parasitologist in Charge

Parasitologist

Senior Entomological Field Officer 1

Entomological Field Officers 2

Laboratory Technician 1

Junior Entomological Field Officers 5

Systematist 1

Asian Surveyor and Clerk 1

There were also 45 trained African Assistants.

APPENDIX I

Routine Identifications of Mosquitoes, Nairobi and Kisumu

NAIROBI

Species	Larvae	Adults
<i>Anopheles (Anopheles) coustani</i> Lav.	102	12
<i>Anopheles (Anopheles) coustani</i> Var. <i>tenebrosus</i> Don.	—	1
<i>Anopheles (Anopheles) implexus</i> Theo.	9	—
<i>Anopheles (Myzomyia) natalensis</i> H. & H.	1	—
<i>Anopheles (Myzomyia) funestus</i> Giles	2	34
<i>Anopheles (Myzomyia) longipalpis</i> Theo.	4	—
<i>Anopheles (Myzomyia) marshalli</i> Theo.	5	2
<i>Anopheles (Myzomyia) harperi</i> Evans	8	—
<i>Anopheles (Myzomyia) rhodesiensis</i> Theo.	27	5
<i>Anopheles (Myzomyia) demeilloni</i> Evans	304	2
<i>Anopheles (Myzomyia) garnhami</i> Edw.	89	81
<i>Anopheles (Myzomyia) macmahoni</i> Evans	12	—
<i>Anopheles (Myzomyia) christyi</i> N. & C.	676	90
<i>Anopheles (Myzomyia) gambiae</i> Giles	666	527
<i>Anopheles (Myzomyia) cinereus</i> Theo.	81	5
<i>Anopheles (Myzomyia) rufipes</i> Gough	101	1
<i>Anopheles (Myzomyia) pretoriensis</i> Theo.	1,230	3
<i>Anopheles (Myzomyia) maculipalpis</i> Giles	25	—
<i>Anopheles (Myzomyia) squamosus</i> Theo.	49	4
<i>Anopheles (Myzomyia) squamosus</i> var. <i>ciddipis</i> de M.	4	—
<i>Anopheles (Myzomyia) squamosus entebbiensis</i> Evans	13	—
<i>Anopheles</i> species	2,226	11
<i>Megarhinus bervipalpis</i> Theo.	21	—
<i>Megarhinus lutescens</i> group	1	—
<i>Uranotaenia balfouri</i> Theo.	42	1
<i>Uranotaenia mashonaensis</i> Theo.	1	—
<i>Uranotaenia fusca</i> Theo	26	—
<i>Uranotaenia</i> sp.	27	—
<i>Ficalbia hispida</i> Theo.	2	—
<i>Ficalbia mimomyiaformis</i> Newst	17	—
<i>Ficalbia</i> sp.	38	—
<i>Taeniorhynchus (Coquilletidia) versicolour</i> Edw.	—	14
<i>Taeniorhynchus (Mansonioides) africanus</i> Theo.	—	7
<i>Taeniorhynchus (Mansonioides) uniformis</i> Theo.	—	51
<i>Taeniorhynchus</i> sp.	—	1
<i>Aedes (Mucidus) scatophagoides</i> Theo.	—	8
<i>Aedes (Mucidus) mucidus</i> Karsch	—	4
<i>Aedes (Ochlerotatus) fryeri</i> Theo.	—	41
<i>Aedes (Finlaya) fulgens</i> Edw.	172	—
<i>Aedes (Finlaya) ingrami</i> group	9	39
<i>Aedes (Finlaya) pulchrithorax</i> Edw.	11	19
<i>Aedes (Stegomyia) aegypti</i> L.	668	25
<i>Aedes (Stegomyia) simpsoni</i> Theo.	44	—
<i>Aedes (Stegomyia) metallicus</i> Edw.	139	1
<i>Aedes (Stegomyia) apicoargentous</i> Theo.	2	12
<i>Aedes (Stegomyia) langata</i> van Someren	10	—
<i>Aedes (Stegomyia) soleatus</i> Edw.	502	1
<i>Aedes (Stegomyia) keniensis</i> van Someren	14	1
<i>Aedes (Stegomyia) de boeni</i> Edw.	390	36
<i>Aedes (Stegomyia) bambusae kenyae</i> van Someren	2	—
<i>Aedes (Stegomyia) africanus</i> Theo.	8	—
<i>Aedes (Stegomyia) luteocephalus</i> Newst	—	7
<i>Aedes (Stegomyia) vittatus</i> Big.	202	—
<i>Aedes (Aedimorphus) marshalli</i> Theo.	16	1
<i>Aedes (Aedimorphus) haworthi</i> Edw.	191	4
<i>Aedes (Aedimorphus) hopkinsi</i> Edw.	—	1
<i>Aedes (Aedimorphus) filicis</i> I. de M.	15	—
<i>Aedes (Aedimorphus) pseudotarsalis</i> van Someren	8	183
<i>Aedes (Aedimorphus) minutus</i> Theo.	—	3
<i>Aedes (Aedimorphus) albocephalus</i> Theo.	6	—
<i>Aedes (Aedimorphus) tricholabis</i> Edw.	—	7
<i>Aedes (Aedimorphus) quasiunivittatus</i> Theo.	585	77
<i>Aedes (Aedimorphus) dentatus</i> Theo.	86	355
<i>Aedes (Aedimorphus) quasiunivittatus</i> group	—	1,504 ♀ ♀
<i>Aedes (Aedimorphus) cummingsi</i> Theo.	37	253
<i>Aedes (Aedimorphus) hirsutus</i> Theo.	37	1
<i>Aedes (Aedimorphus) ochraceus</i> Theo.	1	—
<i>Aedes (Banksinella) lineatopennis</i> Ludl.	18	4
<i>Aedes (Banksinella) circumluteolus</i> Theo.	—	28
<i>Aedes (Banksinella) albicosta</i> Edw.	—	2
<i>Aedes (Dicromyia) furcifer</i> Edw.	—	26 ♂ ♂

APPENDIX I—(Contd.)

Species	Larvae	Adults
<i>Aedes (Diceromyia) furcifer</i> or <i>taylori</i>	151	140♀ ♀
<i>Aedes (Diceromyia) adersi</i> Edw.	194	25
<i>Aedes (Dunnius) michaelikati</i> van Someren	211	—
<i>Aedes (Dunnius) michaelikati gurneri</i> van Someren	—	5
<i>Aedes (Skusea) pembaensis</i> Theo.	96	5
<i>Aedes</i> species	1,260	66
<i>Eretmapodites chrysogaster</i> group	6	—
<i>Culex (Lutzia) tigripes</i> Group and C.	347	17
<i>Culex (Neoculex) salisburyensis</i> Theo.	148	771
<i>Culex (Neoculex) horridus</i> Edw.	30	1
<i>Culex (Culiciomyia) nebulosus</i> Theo.	98	12
<i>Culex (Mochthogenes) inconspicuus</i> Theo.	7	—
<i>Culex (Culex) poicilipes</i> Theo.	8	12
<i>Culex (Culex) bitaeniorhynchus</i> Giles.	86	—
<i>Culex (Culex) annulieris</i> Theo.	1,411	10
<i>Culex (Culex) sitiens</i> Wild	4	234
<i>Culex (Culex) tritaeniorhynchus</i> Giles.	—	1
<i>Culex (Culex) duttoni</i> Theo.	403	3
<i>Culex (Culex) theileri</i> Theo.	43	10
<i>Culex (Culex) univittatus</i> Theo.	287	169
<i>Culex (Culex) simpsoni</i> Theo.	311	78
<i>Culex (Culex) striatipes</i> Edw.	15	3
<i>Culex (Culex) pipiens</i> L.	805	247
<i>Culex (Culex) fatigans</i> W.	124	357
<i>Culex (Culex) zombaensis</i> Theo.	—	33
<i>Culex (Culex) trifilatus</i> Edw.	293	417
<i>Culex (Culex) andersoni</i> Edw.	1	27
<i>Culex (Culex) vansomereni</i> Edw.	697	24
<i>Culex (Culex) toroensis</i> E. & G.	193	21
<i>Culex (Culex) chorleyi</i> Edw.	187	7
<i>Culex (Culex) antennatus</i> Beck.	—	1
<i>Culex (Culex) decens</i> Theo... .. .	216	7
<i>Culex (Culex) perpiscus</i> Edw.	—	4
<i>Culex (Culex) grahami</i> Theo.	1	4
<i>Culex (Culex) prunia</i> Theo.. .. .	1	—
<i>Culex</i> species	3,187	47
<i>Aedes (Diceromyia) taylori</i> Edw.	—	15♂ ♂
<i>Anopheles (Anopheles) coustani</i> Lav.	24	2
<i>Anopheles (Myzomyia) funestus</i> Giles	5	340
<i>demeilloni</i> Evans	1	—
<i>gambiae</i> Giles	510	2,875
<i>pretoriensis</i> Theo... .. .	9	—
<i>pharoensis</i> Theo.	4	17
<i>Anopheles</i> species	98	—
<i>Uranotaenia balfouri</i> Theo.	9	—
<i>Uranotaenia chorlayi</i> Edw... .. .	1	—
<i>Uranotaenia</i> species	9	—
<i>Ficalbia splendens</i> Theo.	1	—
<i>Ficalbia plumosa</i> Theo.	1	5
<i>Taeniorhynchus (Mansonioides) africanus</i> Theo.	—	373
<i>Taeniorhynchus (Mansonioides) uniformis</i> Theo.	—	319
<i>Aedes (Mucidus) scatophagoides</i> Theo.	23	—
<i>Aedes (Aedimorphus) cumminsi</i> Theo.	73	—
<i>Aedes (Aedimorphus) hirsutus</i> Theo.	15	—
<i>Aedes (Aedimorphus) natronius</i> Edw.	—	12
<i>Aedes (Aedimorphus) ochraceus</i> Theo.	1	—
<i>Aedes (Banksinella) lineatopennis</i> Ludl.	171	31
<i>Aedes</i> species	15	—
<i>Culex (Lutzia) tigripes</i> Grp. and C.	157	3
<i>Culex (Neoculex) insignis</i> Cart.	—	41
<i>Culex (Culex) poicilipes</i> Theo.	2	4
<i>Culex (Culex) annulioris</i> Theo.	125	—
<i>Culex (Culex) duttoni</i> Theo.	139	3
<i>Culex (Culex) theileri</i> Theo.	—	1
<i>Culex (Culex) univittatus</i> Theo.	356	47
<i>Culex (Culex) pipiens</i> L.	575	42
<i>Culex (Culex) fatigans</i> W.	33	731
<i>Culex (Culex) vansomereni</i> Edw.	—	2
<i>Culex (Culex) toroensis</i> Edw.	—	2
<i>Culex (Culex) antennatus</i> Beck.	381	72
<i>Culex (Culex) decens</i> Theo... .. .	205	1
<i>Culex</i> species	519	—
<i>Culex (Mochlhogenes)</i> Theo.	4	—

NAIROBI SUMMARY

	Number of species	Total number of Larvae examined	Total number of Adults examined
Anopheles	21	5,634	778
Megarhinus	2	22	—
Uranotaenia	3	96	1
Ficalbia	2	57	—
Taeniorhynchus	3	—	73
Aedes	41	5,095	2,899
Eretmapodites	1	6	
Culex	28	8,906	2,517
TOTALS	101	19,816	6,268

KISUMU SUMMARY

	Number of species	Total number of Larvae examined	Total number of Adults examined
Anopheles	6	651	3,234
Uranotaenia.. .. .	2	19	—
Ficalbia	2	2	5
Taeniorhynchus	2	—	692
Aedes	6	298	43
Culex.. .. .	14	2,496	949
TOTALS	32	3,466	4,923

APPENDIX II

Aedes ægypti Larvæ House Index

Station	1941		1946	
	Yearly mean	Highest index for year	Yearly mean	Highest index for year
Lamu	7.91	18.0	0.37	1.25
Mombasa (Island)	9.4 (1937)	—	0.29	0.56
Mombasa (Mainland)	18.9 (1937)	—	0.53	1.8
Kwa Jomvu	3.08	17.47	0.88	3.13
Kilifi	1.83	6.0	0.70	1.3
Malindi	3.85	7.3	0.15	0.8
Vanga	7.9	11.5	0.42	1.8
Nairobi	5.8	5.8	0.11	0.5
Nambare	5.01	15.04	0.04	2.1
Miritini	5.33	38.8	0.56	2.2
Mazeras	6.86	54.9	0.64	1.8
Mariakani	7.82	50.4	0.01	0.6
Samburu	2.44	20.0	0.17	0.95
Kibivezi area	12.7	28.1	—	—
Ft. Ternan	2.5	9.3	0.8	5.3
Mohoroni	1.51	4.7	0.77	6.0
Kibigori	4.46	11.7	0.16	1.9
Miwani	4.12	10.8	0.50	9.5
Kibos	4.15	12.7	0.34	5.5
Kisumu	0.19	0.24	0.14	3.5
Kisumu (Airport Reserve)	0.19	—	0.03	0.31
Kisumu Airport.. .. .	0.32	1.7	0.06	2.9
Nakuru	0.09	0.39	0.03	1.06
Eldoret	0.14	0.64	0.001	0.07
Kitale	0.58	2.19	0.01	0.38
Mumias	0.77	4.2	0.03	1.7
Kakamega	0.45	1.2	0.28	1.4

